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Supervising Venereal Disease Carriers*

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THE study of known cases of the common communicable diseases to detect sources of infection and contacts is a generally accepted function of health departments. Though detecting diphtheria carriers has been accepted for some years as a reasonable procedure, a systematic tuberculosis case-finding campaign has not generally been made a part of official local health programs. To contract diphtheria was a misfortune; to suffer from tuberculosis was somewhat of a disgrace. Hence we took aggressive measures against diphtheria, but confined our early antituberculosis programs to the building of hospitals and sanatoria for the unfortunate victims of the disease. Not until the Framingham demonstration had shown the way, were case finding programs generally advocated for health departments. If the popular attitude toward tuberculosis delayed the adoption of case finding measures, it is easy to imagine the effect of the stigma of gonorrhea and syphilis upon venereal disease control.

Prior to the war, few hospitals maintained venereal disease clinics in their outpatient departments; little was known of the prevalence of the infections; and nothing was done to find infectious persons and to induce them to accept the limited treatment facilities available. The war emergency revealed the true status of venereal diseases, and a herculean attempt was made to combat them. The war measures consisted principally in a nation-wide extension of the meager medical facilities, an aggressive educational campaign, and the repression of commercialized prostitution.

Clinic facilities for free diagnosis and treatment are essential; for otherwise indigent patients, suspected carriers who are required to

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submit to examinations, and infectious cases under compulsory treatment cannot be cared for. But medical treatment facilities alone without social service are an ameliorative rather than a preventive measure. All are agreed that sex education is an important factor in preventing venereal infections, and hence should not be neglected; yet none is so sanguine as to believe that information about the dangers of venereal infection alone will deter all persons from exposing themselves to these diseases. Again, vice repressive measures are equally indispensable, for they make commercialized prostitution difficult and thus tend to close the most fertile avenue for the spread of the diseases. Yet police repression of public prostitution cannot prevent the much more numerous clandestine prostitutes from spreading infection. These three measures have been carried on in New Jersey since the war as in other states, but important as they are they lose their effectiveness unless they supplement a determined effort to find through epidemiologic methods the relatively few infected persons who are sexually promiscuous. In New Jersey this additional step has been taken, i.e., the detection and supervised treatment of the persons responsible for the spread of the venereal diseases.

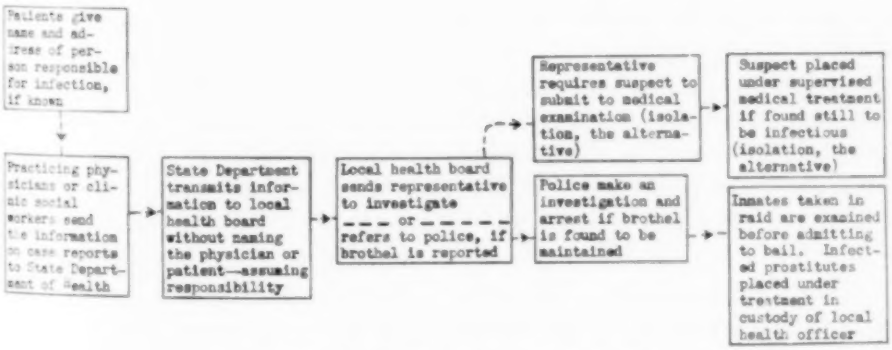
For the past five years the New Jersey State Department of Health has urged practicing physicians and clinic social workers to obtain information about the source of infection from all patients recently infected with a venereal disease, and to include the name and address of the source in their case reports. The response to the request was slow at first, but the continued improvement has been encouraging, for the number of physicians who give this assistance has increased to the point where for the past two years about one-tenth of all the case reports (chronic and acute alike) have included in them the name and address of the probable source of infection. The percentage of active cases giving the desired information about the source is much greater than one-tenth, for in the clinics in the larger cities the social worker who takes the patient's history obtains the information about the source of infection. As she is the deputy of the local health officer, the social worker investigates the reputed source immediately, and therefore does not include sources of infection on the case reports which she sends to the State Department of Health because the information is unnecessary.

In New Jersey, physicians report venereal disease cases direct to the State Department of Health instead of to the local registrar. When reports in which a source of infection is named are received from practicing physicians, the State Department of Health, without divulging the name of the physician or his patient, sends to the local health board

having jurisdiction the name and address of the suspected person. If a house of prostitution is named as the place in which the infection was contracted, this information is referred through the health officer to the police officials having jurisdiction, with the request that an investigation be made and the appropriate action be taken to close the house. More than a hundred brothels or professional prostitutes were reported in this manner during the past year and have been investigated by police officials.

If a man or woman is named as the source of infection, the venereal disease social worker or, if none is employed, a nurse or an inspector delegated for this work by the health officer investigates the report. If the investigator is successful in locating the person suspected of being a focus of infection, guarded inquiries are made about the suspect, and, unless the person's reputation is above reproach, he (or she) is informed that the State Department of Health has reported him (or her) as suspected of being infected with a communicable disease and that the law requires the health officer to demand a physical examination either by the family physician or at the public clinic. The suspected person is assured that no publicity has been or will be given to the investigation and that no one will be informed of the nature of the suspected condition as long as treatment is continued.

In only a very few cases, among the many hundreds of such investigations made during the past five years in New Jersey, have persons been named whose reputation was such as to make it inadvisable to ask the person to submit to examination. When this has occurred, the investigation has been dropped on the assumption that such a person would be unlikely to expose many persons to infection and that it would be better not to require a person possibly innocent of illicit sex relations to submit to examination. It should be noted that when suspected persons are approached they assume, usually, an attitude of injured


Patients give name and address of person responsible for infection, if known
Practicing physicians or clinic social workers send the information on case reports to State Department of Health
State Department transmits information to local health board without naming the physician or patient—assuming responsibility
Local health board sends representative to investigate
or
refers to police, if brothel is reported
Representative requires suspect to submit to medical examination (isolation, the alternative)
Police make an investigation and arrest if brothel is found to be maintained
Suspect placed under supervised medical treatment if found still to be infectious (isolation, the alternative)
Inmates taken in raid are examined before admitting to bail. Infected prostitutes placed under treatment in custody of local health officer

STEPS IN FINDING FOCI OF VENEREAL INFECTION

innocence, but the fact that they have been reported by the State Department of Health to the local health departments and that the health officer is "after them" causes them to think twice before their protestations of virtue lead to active opposition to the health officer's wishes.

The following report on a referred case from the venereal disease social worker in one of the large New Jersey cities is typical. Sometimes the protestations of innocence worry the inexperienced investigator, but this matter-of-fact statement indicates that the subject did not make much of an impression on the social worker.

Dear Doctor:

In reply to your letter of the 8th, relative to a case of syphilis contracted from "Miss Mary" at 172 B. Street, I would advise as follows:

Mary R— of the above address was interviewed and vehemently denied having venereal disease. A smear was taken which proved positive and a Wassermann test was four plus. Inasmuch as she is a food handler, her permit will be revoked. We will keep her under strict supervision and advise you of any further developments.

The tactful but firm nurse or health inspector finds little difficulty in inducing such people to submit voluntarily to examination and to remain under treatment if, and when, found infected.

The letter introduces another consideration—that of the incomplete or vague name and address. Frequently physicians can obtain only a nickname or a first name, or the approximate location of a house on a given block. Obviously, such information is of less value than exact names and addresses, yet we have found that an experienced investigator can work wonders with very meager help. Physicians should be impressed with the importance of pinning their patients down to get as much information as possible, yet the physician should be encouraged to transmit whatever information he may get, even though vague. A half loaf is better than none in this instance.

Only in a score of the larger cities are venereal disease social workers or public health nurses with social training employed on the staff of the health department. In many of the smaller incorporated municipalities, a public health nurse may be available for occasional venereal disease follow-up, but in most of the suburban and rural areas no official with any health training is available. In New Jersey, unfortunately, as in New England, each township committee is constituted a board of health. Usually some corner-store clerk is designated as the executive officer, and as a rule he is innocent of any knowledge of the science of public health. The State Department of Health has adopted the policy of sending a representative to visit such rural officers when the first case is to be referred to them. They are impressed with the

necessity for secrecy and tact in dealing with suspected cases, and the state official goes with the local health officer and demonstrates the technic of the interview. Frequently these part-time, untrained officials "catch on" surprisingly well once the way is shown. The following letters tell the story of work well done by a local health officer of a New Jersey coast town.

Dear Sir:

Replying to yours of the 11th, will say that I have located the man, and compelled him to undergo an examination by Dr. H—, this city, the result being positive.

I have ordered him to report to Dr. H— as often as required for treatment, with the assurance that if any more cases are reported as being infected by him after this date, he will be locked up for the protection of the public.

Dear Sir:

Replying to yours of the 15th, asking that I have Helen R— examined, if not being treated by a physician for syphilis, she being accused by Jerry B— of infecting him. Our school nurse interviewed her, and she told her that she was under the care of Dr. D—, which he verified and says she is getting along all right. She says Jerry is a liar, for he gave it to her.

Note: The name of the woman's accuser was not given by the State Department of Health. We do not know how the Health Officer learned it.

Dear Sir:

Your communication regarding the case of Emily W—, she being reported as a source of syphilitic infection, was received at 9:00 a. m. this morning. I at once sent my assistant, Miss H— who is also the school nurse and a very efficient one, out on the case.

She reports the girl to be only about sixteen years old, very attractive, and without any knowledge of the seriousness of her condition; she will go under the care of Dr. B—, going to him this evening for the first treatment. He is the representative of the Bureau of Venereal Disease Control.

This case was disposed of at 10:30, ninety minutes after receiving your letter.

Not all rural health officials take kindly to the suggestion that venereal disease follow-up is a legitimate local health function. Some few react as did the following:

Gentlemen:

Replying to yours of the 17th inst., concerning investigation of case of Helen C—, will say we received Dr. B—'s resignation, and we have had no health board meeting, hence no action. I am not sure whether you are inferring that it is my duty to look after and investigate these cases or not. I had a little experience some few years ago and don't care for any more. However, if this is one of the requirements of me, inform me definitely and I will either do the same or resign as Dr. B— did. That is his reason for resigning. From what I hear there is a chance for cleaning up several at this house.

Other rural health officials interpret the law in their own way. For instance, the next officer, a doctor, seems not to be greatly impressed with the provision of the state law which authorizes health officials to

cause suspected persons to be examined. In this instance, the original letter asking that Mrs. Anna A— be examined as a source of gonorrhea was not acknowledged, and several of the usual follow-up letters, each a little more stern than the preceding, failed to make any impression until the following answer was received:

Dear Doctor:

All your communications, referring to Mrs. Anna A— as suffering with gonorrhea, received.

Will say I have attended the A— family as long as they have lived in town, and as she never said anything to me about having had gonorrhea, at first I thought I wouldn't have anything to do with it.

This is the reason I made no reply. A few days ago she was telling me some of her troubles, so I asked her about it. She said she had taken no treatment for it, and neither Mr. A— nor herself suffered any. I suppose by that, she hasn't it.

Others seem to think that the state regulation requiring two negative smears before the case is discharged is a little too onerous for comfort, and occasionally we get such a reaction as this:

Dear Doctor:

Your letter of recent date, relative to one Adelaide Y— received and contents noted; would say in reply that on behalf of the Board of Health of Clemens Township you are granted full authority to go ahead and make the examination of Adelaide Y— of Laurelton, as you suggested the State Board was not satisfied with the one negative report made and sent by Dr. T—.

As far as we are concerned, knowing the facts of the case, we are satisfied with the report of Dr. T— and considered the matter closed.

I am directed to say to you that you may make the examination if you wish on your own responsibility and at your own expense.

By and large, the local health officials of New Jersey respond readily and efficiently to the request that suspected carriers of venereal disease be examined and placed under supervised treatment. In other words, venereal disease case finding is a practical procedure, for it is producing results in New Jersey, where conditions are comparable to those of the New England States. By this method it is possible to detect the persons who are the worst offenders in spreading venereal diseases, and if the worst offenders are taken care of the occasional offender will be less dangerous.

It may be assumed that, although gonorrhea and syphilis are very prevalent diseases, the number of persons suffering from these diseases in an infectious stage and who are actively engaged in spreading the infections to others is not very great in any one community. Sooner or later each will infect a person who will go to a physician or clinic for treatment. With coöperating physicians and active health departments, it is reasonable to assume that the proposed method will be

effectual in stopping the important avenues for the spread of venereal diseases.

Important as is this procedure, other means of discovering cases, of course, cannot be neglected. Voluntary and other official agencies can assist the health officer in detecting and referring for treatment suspected venereal infections among persons presenting other social problems. The police department can assist by having examined all persons arrested on charges involving sex offenses, and health officials are justified in demanding that the police repress all open prostitution. Industrial medical departments and employment agencies are another fertile source for the detection of unrecognized cases, and the infant hygienists will find important leads from stillbirths, neonatal deaths, and other conditions where congenital syphilis can be detected. The details of these supplementary venereal disease control activities are too involved to permit of discussion here. Some of them are described in two earlier papers on venereal disease case finding.[1]

If we offer treatment only to those who seek it voluntarily, if we place too much faith in the influence of sex information upon human behavior, if we think of sexual promiscuity in terms of vice districts, and neglect that "gold mine" of information—the recently infected venereal case now under treatment—we are neglecting the most effective method of attacking today's most dangerous preventable diseases —gonorrhea and syphilis.

REFERENCE

1. Finding Venereal Infection Sources, *Nation's Health*, 9:6 (June), 1927; and Municipal Responsibility in Venereal Disease Control, *Pub. Health News* (New Jersey State Dept. of Health), 12:8 (July), 1927.

Promotion of Physical Education in Italy

A recent royal decree provides an annual appropriation of 10,000,000 lire (beginning with the fiscal year 1928-29) for the recently established National Bureau of Physical and Moral Education of Young People. The decree also gives the bureau charge of the physical education of children in elementary public schools and in all private schools and authorizes it to establish normal schools for the training of teachers of physical education. The establishment of such a school in Rome has already been decided upon, and 400 applications for admission have been received.—*Rassegna della Previdenza Sociale*, Rome, Jan., 1928, p. 101.

Study of Urban and Rural Tuberculosis Death Rates in New York State

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IS THE rural death rate from tuberculosis higher and is it declining at a slower pace than that of the city? This question has been the subject of a good deal of discussion ever since it was raised by Dr. Allen K. Krause, Editor of the *American Review of Tuberculosis* in the March, 1926, issue of that journal. An answer to the question has been attempted in the study outlined in this article.

New York State's figures are used as a basis of comparison because they are fairly typical and also because a detailed analysis of the records was made possible by the New York State Department of Health. It is probable that any other state in the Union where there are a number of sanatoria located in rural territory will find a similar comparison. Dr. Krause pointed out that between 1913 and 1918 the rural tuberculosis rate of New York State was below the urban rate, but that during 1918 the rural line crossed the urban, and from that time until 1925 the rural tuberculosis rate in New York State had exceeded the urban rate and in 1924 reached almost twice the urban rate.

To arrive at any understanding of the significance of these figures, or the possible reasons therefor, one must be somewhat familiar with the methods used in collecting the data on which the death rates are based. The usual custom is to consider as a part of the mortality of any district all deaths which occur in that district whether of residents or non-residents. This plan is in operation in New York State and therefore recorded tuberculosis death rates are not an accurate measure of the amount of tuberculosis in any community, but show only the number of cases terminating fatally in that territory.

Then again it is germane to a discussion of this sort to know exactly what is meant by "urban" and "rural." The former term usually connotes a busy city and the latter a pastoral scene dotted with farmhouses. That is all right for literature, but in statistics clearly defined limits must be drawn since we are dividing all territory in New York State into the two classes.

Up to the year 1922 the New York State Department of Vital Statistics classified as urban all cities and three large villages, making the dividing line of population 10,000; that is, those cities and villages

having a population of 10,000 or over were classed as "urban" and all other territory was classed as "rural."

In 1922 the classification was changed and the dividing point in population between urban and rural was placed at 2500. All incorporated villages of 2500 or more population and all cities were included under the heading "urban," and the rest of the state classed as "rural." It is a question whether a village of 3000 should properly be considered "urban"; but it is equally questionable whether under the prior classification a village of 9,500 could correctly be considered "rural." In the graphs made by the New York State Department of Health for Dr. Krause's editorial the figures were kept consistently according to the 10,000 population division throughout, although a change in actual practice occurred in the middle of the period studied.

Dr. Krause sums up the picture as shown by the graph as follows:

> This trend, it is plain, is a mounting ratio of rural to urban tuberculosis, which has been going on for at least 13 years, to reach a point at present which puts rural well ahead of urban mortality. During the last 5 years the trend has been greatly accentuated, as it expresses, no doubt, a static or slightly rising rural rate set against an accelerated urban decline . . . . . Were this the portrayal of merely an addition to rural columns of decedents transferred and subtracted from their urban residences, its uniformly expanding character could be explained only by the condition of an ever increasing number of deaths of city dwellers in the country.

Had Dr. Krause stopped here he would have had the answer. But he chose to go further and to somewhat repudiate this explanation by quoting from Dr. Eichel, then Statistician of the State Department of Health, to the effect that the annual number of non-resident deaths formed an almost constant percentage of the recorded deaths, so that the general trend of mortality was not affected. When Dr. Eichel made that statement he was discussing tuberculosis death rates in the 10 largest cities of the state, and for them the statement is undoubtedly true. It is not true for the situation in rural territory.

To arrive at such a positive statement as the above we accepted, to a limited extent, Dr. Krause's challenge for an analysis in greater detail of the vital statistics of New York State. The main point at issue, already defined by Dr. Krause, is whether the rural tuberculosis rate represents a mortality of decedents actually residents of rural territory. To ascertain this a study was made from information contained in the death certificates themselves.

The years covered were 1917 to 1924 inclusive, since prior to the year 1917 the vital statistics records were not available in the same forms as for later years. The records of the years 1925 and 1926 were in process of current tabulation and compilation and could not be made available for the purposes of this study.

Since the classification for "urban" and "rural" had been changed in 1922 to a division point of 2500 population, it was felt that either the former or the latter classification should be carried throughout, as changing the areas in 1922 might seriously vitiate the significance of the data. We have chosen to use the later classification throughout; that is, to consider as rural all unincorporated territory and all incorporated places under 2500 population. This certainly more clearly defines "rural" territory, than the former classification even if the remaining territory is not so clearly "urban," for it is with the changes in rural conditions with which we are chiefly concerned. This will account for the discrepancy between the official figures and those given in this study, although the total tuberculosis deaths for each year in each county and for the state as a whole will of course be the same as the official figures.

In the whole of New York State there were in the 8 years under consideration approximately 103,000 deaths from tuberculosis, of which over 16,000 occurred in rural territory. To discover from observation of the original death certificates themselves the usual place of residence of rural decedents and the time of their residence at the place of death was the method of this study.

It comprises data on 16,347 deaths from tuberculosis in rural territory in New York State during 8 years, 1917 to 1924 inclusive. Of this number 7,967 deaths or 49 per cent, were deaths of non-residents of the districts in which the deaths occurred. But this figure of 49 per cent is an average figure for the 8-year period. As a matter of fact, the percentage of non-resident tuberculosis deaths in rural New York in 1924 was 57, an almost steady per cent increase being shown from 1917 when the corresponding figure was 41 per cent.

From the careful analysis of the data there can be but one answer to the question as to the cause of the higher rural tuberculosis rate; namely, the deaths occurring in sanatoria and other institutions located in rural territory. In the very summer of 1918 when according to Dr. Krause's article the rural rate rose above the urban rate, the United States Army General Hospital No. 8, with 1000 beds for returning tuberculous soldiers was established in the rural part of Orange County. Although it was in operation only 2 years it accounts for about one-third of all non-resident deaths in Orange County in the entire 8 years. The large Monroe County Hospital, Loomis Sanatorium in Sullivan County, Onondaga County Sanatorium, the Samuel W. Bowne Memorial in Dutchess County, to cite only a few of the many, are all located in rural territory.

In 1917 there had been established in rural New York State 24

sanatoria with a capacity of 2868 beds. By 1923, there were 41 sanatoria in New York State in rural territory with a capacity of 4511 beds, a 57 per cent increase of rural beds in 6 years. There was almost exactly twice that increase in deaths in rural tuberculosis sanatoria in the same 6-year period; viz, an increase of 115 per cent.

Only 30 per cent of non-resident rural deaths were in private homes, 54 per cent were in tuberculosis sanatoria and the remaining 16 per cent in what were classed as "other institutions" although most of them were in tuberculosis wards or divisions of general hospitals. There were a few scattering deaths at county farms and in so-called "health farms." If the tuberculosis sanatoria deaths and those in "other institutions" are grouped, as they may properly be, 70 per cent of all non-resident deaths in rural territory are in tuberculosis institutions. But this figure of 70 per cent is the average for the 8-year period. It ranges from 61 per cent in 1918 to 80 per cent in 1924.

Let us now summarize the facts for 1924, the latest year of the study. Of all the tuberculosis deaths in rural territory 57 per cent were of non-residents of the territory in which the death occurred, and 80 per cent of all these non-resident deaths occurred in tuberculosis institutions.

To make clearer the picture of the migratory character of the tuberculosis decedents in rural territory, a classification was made of the number resident at the place of death less than 3 months prior to death, and it was found that 44 per cent of the non-resident deaths during the 8-year period fell into this class. For 1924, the last year of the study, the corresponding figure was 48 per cent. The average length of residence in the district where death occurred was 6.7 months. This figure ranged by counties from 3 months in Tioga County to 8½ months in Essex County, one of the famous health resorts of the state.

For a fuller knowledge of the rural situation, it was necessary to know from what sources the migration to rural territory had been made. Obviously some of it might come from other rural territory in the state and be properly a part of the rural rate. This part of the study is perhaps one of the most important phases of it. It was found that 10 per cent of the non-resident rural tuberculosis deaths were of persons who resided outside New York State; 15 per cent were of non-residents (clearly specified on the death certificate as having resided less than a year in the district) but for whom the usual place of residence was not entered; and the remaining three-fourths were residents of other sections of New York State, 62 per cent residing in urban and 13 per cent in other rural New York territory.

If the 15 per cent for whom the residence was not given be distrib-

uted acording to the ratios found for known residence the figures would then show that 73 per cent of rural decedents came from urban territory, 15 per cent from other rural territory, and 12 per cent from outside New York State. The 12 per cent from outside New York State are, as might be expected, found almost exclusively in Essex, Sullivan and Orange Counties, health resorts famous throughout the country. The United States Army General Hospital in Orange County furnished one-sixth of the deaths of persons whose homes were outside New York State.

The question as to the greater propensity for migration in search of health between male and female sufferers from tuberculosis is settled by the fact that during 8 years in New York State the percentage of male deaths to all non-resident deaths in rural territory was 61. The lowest percentage of male deaths was found in Schuyler County (25 per cent) and the highest in Orange County (81 per cent), the county where the United States Army General Hospital was situated. Even with the figures for the latter county excluded the males were 60 per cent of the total.

The total non-resident deaths in rural territory were classified into broad age groups: under 15, 15 to 24, 25 to 54, and 55 and over. No facts of especial significance were brought out through this phase of the study. As might be expected, 86 per cent were at the ages 15 to 54, only 3 per cent children under 15, and 11 per cent older persons, past 55.

The tuberculosis death rates for urban and rural New York State (uncorrected) based on a 2500 population division are given in Table I.

TABLE I

Year	Urban	Rural	Year	Urban	Rural
1917	140.6	134.7	1921	80.0	108.4
1918	135.3	127.0	1922	75.6	106.7
1919	109.8	119.0	1923	78.0	101.2
1920	93.2	117.8	1924	76.7	94.2

Even these uncorrected recorded rates show a steady decline in the rural tuberculosis rate as in the urban, which has been continuous for at least 8 years.

On the basis of the findings of this study we can correct those rates year by year by deducting from the rural mortality the percentage of non-residents found among the decedents for each of those years. A correction must also be made for non-residents from other rural territory whose mortality properly belongs to the rural rate. When these two corrections are made the rural rates for the 8 years are as follows:

The corrected rural rates eliminating non-residents fall far below the corresponding urban rates and the trend is downward. (See Figure I).

TABLE II

Year	New York State Tuberculosis rural rate uncorrected	New York State Corrected for non-residence	Year	New York State Tuberculosis rural rate uncorrected	New York State Corrected for non-residence
1917	134.7	90.1	1921	108.4	59.5
1918	127.0	85.8	1922	106.7	58.8
1919	119.0	73.3	1923	101.2	57.0
1920	117.8	68.4	1924	94.2	48.9

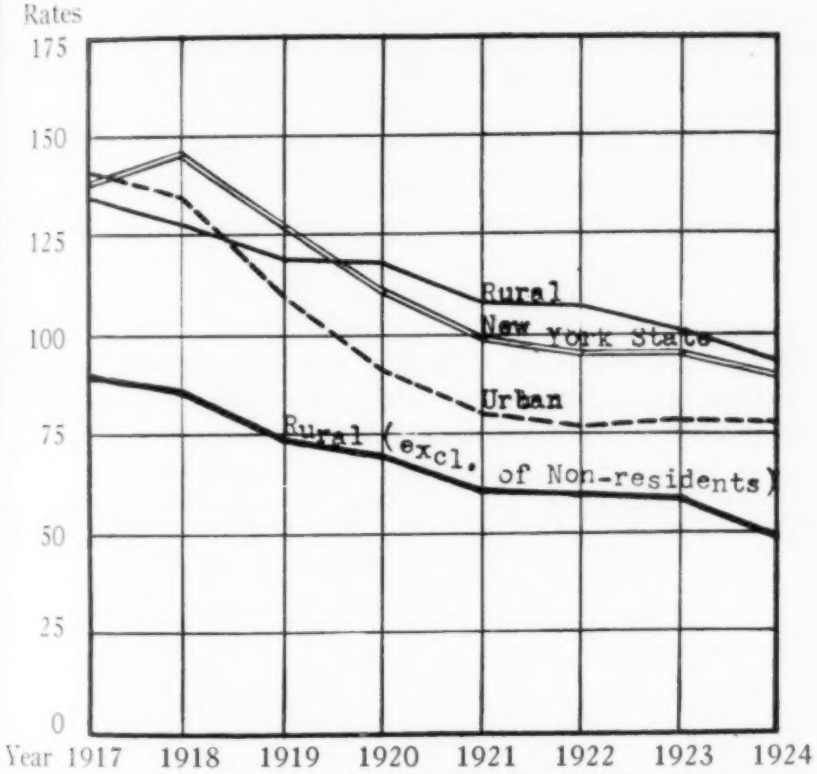

FIGURE I—Urban and Rural Tuberculosis Death Rates with Rural Rates corrected for Non-residents. New York State, exclusive of New York City, 1917-1924.

To this the question may be raised: that is all right for a correction of non-residents in rural territory, but how about the correction of rates in urban territory? Are there not equivalent percentages of tuberculous persons who go to urban institutions and die there, who properly belong in rural territory?

Fortunately this matter has already been answered for us by two studies. In 1922 Dr. Otto Eichel then Director of the Division of Vital Statistics in the New York State Department of Health, made a

correction of all tuberculosis deaths for residence in which he charged all tuberculosis deaths to the district in which the decedent resided when the disease began. His findings were referred to by Dr. Krause.

Dr. Eichel found that in correcting the tuberculosis death rates, not only the New York City rate was raised from 3 to 5 points but that the adjustment for the 10 largest cities in the state showed that in all but 2 the rate after correction for non-residence was higher than the usual recorded rate.

We have still another study just completed by Dr. J. V. De Porte, Director of the Vital Statistics Division of the New York State Department of Health. For the year 1926 all tuberculosis deaths in New York State were re-allocated to the districts which were the usual places of residence of the decedents, and Dr. De Porte's figures show that on this basis the rural and urban rates change places; that is, that the corrected urban rate is even farther above the rural than the rural exceeded the urban in the recorded rates. The actual figures are as follows:

TUBERCULOSIS DEATH RATES IN NEW YORK STATE PER 100,000 POPULATION, 1926

Urban		Rural	
Recorded	Corrected for Residence	Recorded	Corrected for Residence
70.4	83.2	87.5	59.4

Dr. De Porte's figures for 1926 show that the actual rural rate is only two-thirds the recorded rate, while the actual urban rate is 18 per cent higher than the recorded urban rate.

SUMMARY

The usual recorded mortality rates from tuberculosis for rural and urban territory are fallacious in that they do not represent the actual mortality of the various sections.

Rural tuberculosis mortality rates are controlled by the deaths of persons in tuberculosis institutions. In New York State the number of beds for tuberculosis in rural territory have increased 57 per cent in the last 6 years. The increase in deaths in rural tuberculosis sanatoria has increased 115 per cent in the same time.

Fifty-seven per cent of persons who die in rural territory are non-residents of that territory. Eighty per cent of all non-resident rural deaths occur in tuberculosis institutions.

When an actual analysis of tuberculosis deaths is made and non-residents are allocated to their home area the rural tuberculosis rate becomes only two-thirds the recorded rate while the urban rate is increased by 18 per cent.

The actual rural tuberculosis rate is considerably lower than the urban in New York State and is declining.

Advancement in Mosquito Control in the United States and Canada*

BY questionnaire, the committee obtained information on mosquito control activities from the health departments of 42 states and provinces in North America and from the territory of Alaska.

These units are grouped in 4 classes and under each classification, a summary of the activities of each state or province is given.

GROUP No. 1—States and provinces in which mosquito control operations are being carried on:

New Jersey—Control of salt marsh mosquitoes continues to be the greatest problem. Malaria mosquitoes have appeared only rarely in two or three counties, principally in unprotected areas. Salt marsh ditching has gone on; several million feet (when figured on a 10″ width basis) are being cut each season, with the result that this phase of work approaches completion in a number of counties. Ditch cutting and cleaning machines are in use in several places; Hudson County employs electric pumps for drainage purposes; mowing machines have been used in several counties to clean up ditch edges and to afford access to swamps; tractors have proved helpful in transportation of oil, and power oil sprayers are in use. Due to dissatisfaction with the spreading, lasting and killing properties of fuel oil, the State Experiment Station will coöperate with oil companies to produce a more suitable oil. The State Experiment Station has also developed a new mosquito trap.

County-wide control was continued in 10 counties operating under the State Mosquito Control Laws and it is expected that 2 more counties will soon engage in this work in the same manner. Although the season was favorable for mosquito production, annoyance in the metropolitan districts was but slight. Where salt marsh mosquitoes have been largely eliminated during the last 10 years from New Jersey coastal areas, there has occurred an annual average increase in taxable values of 75 per cent more than where the mosquitoes are still present.

Illinois—Malaria prevails in the 12 southern counties and pestiferous mosquitoes are more or less annoying throughout the whole state. Culex production in sewage polluted water courses around Chicago has been enormous. In the south, 3 additional cities inaugurated

* Abstract of Report of the Committee on Mosquito Control, delivered before the Public Health Engineering Section of the American Public Health Association at the Fifty-sixth Annual Meeting at Cincinnati, O., October 19, 1927.

control work and numerous lakes and ponds were stocked with minnows. In sparsely settled swampy areas, screening, destruction of adult mosquitoes and quinine sterilization are practiced. To determine the economic importance of predominant species, and having in view the control of all annoying mosquitoes, some experimental work was done in the northern part of the state. Around Chicago and its environs, intensive control work resulted in greater benefits; for through the efforts of a number of official and semi-official agencies, more than 20 cities and towns successfully engaged in abatement work. Several miles of channels were opened up to correct obstructed flow in rivers and creeks polluted with sewage from the Chicago area. A number of municipalities raised funds by popular subscription for interior control work. The outstanding feature in mosquito control work this year was the enactment of a law in Illinois providing for creation of abatement districts in communities having a population greater than 300 and for the collection annually of funds by taxation not to exceed one mill on each dollar of taxable property. Application has already been made for one district in the south and three in Cook County, embracing 50-odd municipalities. It is understood to be the plan that such abatement districts will take over all mosquito control work within their respective boundaries.

Texas—Of the 254 counties in the state, about 200 have a mosquito problem with approximately 100 of these reporting malaria. The state authorities are confronted with the problem of spreading control work over a very large area at an increased per capita cost. Systematic control is conducted in some 130 towns, though not all have full-time programs. To those towns which have previously had control operations functioning, the state authorities give only certain supervision and assistance in reviving intensive field work during the mosquito breeding season. Under this limited plan the state health department is enabled to extend its field of operation. Much has been done to eliminate mosquitoes and malaria in certain areas of concentrated population, but little has been done in rural sections. Control operations along the Mexican border have been continued by local communities. Organized control work has reached directly and indirectly approximately 2 million people, which is about 40 per cent of the state's population.

Louisiana—Although mosquitoes are present all over the state and certain sections are malarious, it is stated that the mosquito nuisance is less, that there have been no outbreaks of mosquito-borne diseases, and that the malaria rate seems to be continuing a gradual decline. The state health department has continued to make surveys and submit

plans for and cost estimates of control work. As part of the post-flood sanitation program the work of screening 600 homes of known malaria carriers is being carried out. This work is being done at the expense of the American Red Cross and under the direction of the U. S. Public Health Service. Data collected to compare mosquito bars with screens indicated that more than half of the mosquito bars were not mosquito proof. Although screens give greater protection, the cost of using them, based on a 4-year period and as compared to mosquito bars, was found to be about the same.

Mississippi—Three species of Anopheles are to be found here, and *Aedes sollicitans* exist along the coast. The receding waters from the flood created innumerable *Anopheles quadrimaculatus* breeding areas. The 22 full-time county health departments have accomplished considerable control work and 4 additional cities have appropriated special funds to engage in abatement work. The state has maintained its system of advising and supervising. With the aid of the American Red Cross and the U. S. Public Health Service, approximately 3400 homes were screened as a part of the flood sanitation program. The outstanding feature this year is the development of increased interest on the part of the citizenry in mosquito control work.

Alabama—Anti-malaria work and the control of pestiferous mosquitoes are regular functions of the 32 county health units which serve 65 per cent of the population. The outstanding feature of the work is the prevention of new foci looking to the time when the old foci will be eliminated and malaria controlled. The permit system for impounding water is a primary tool of control and places the burden on the property owner where it belongs. Failure to secure results brings a revocation of permit.

Railroad Coöperation in Texas, Louisiana, Arkansas and Missouri—The St. Louis-Southwestern Railroad, Missouri Pacific Railroad and the Chicago, Rock Island and Pacific Railroad all extended their malaria control activities in 1927 in these states. A number of communities took advantage of the coöperation offered by the railroads and inaugurated control measures. Engineering personnel of the railroads lent material assistance during the flood period in planning and effecting anti-mosquito campaigns.

California—Data for this year were not received by the committee. Salt marsh mosquitoes exist along the coast and Anopheles and Culex inland. Malaria is prevalent in the Sacramento Valley. There is every reason to believe that the usual activities of the 17 organized abatement districts continued during the year.

Virginia—In the Eastern section of this state a malaria mosquito

problem exists, and salt marsh mosquito production along the coast remains unabated. Control work, limited almost entirely to the malaria phase, was continued in 27 towns. A study of salt marsh breeding was made in the area of Hampton Roads and a control commission appointed in anticipation of the creation of a district there. At Quantico, dusting with Paris green by airplane was carried on throughout the season.

South Carolina—Anopheles control work was conducted in 4 counties by permanent health units under state supervision, and 7 drainage districts established at the joint expense of the International Health Board and the counties, have been maintained and have proved effective. Financial conditions preclude the establishment of 15 additional drainage districts on which surveys have been made. Coöperation has been established with the state highway authorities for the elimination of borrow pits, and at Bamberg, Paris green dusting by airplane was successfully tested. Impounding water regulations were rigidly enforced. State assistance was given to 23 towns in the control of pestiferous mosquitoes. As an educational measure, lecture courses were established in 3 universities in the state.

North Carolina—Malarious mosquitoes are present in 13 of the eastern counties. Such control work as is done is conducted from the standpoint of disease prevention. Where required, control operations were conducted by county health departments under the supervision of the state. Two counties have been able to report a reduction of malaria of approximately 60 per cent after 3 years' intensive work. A study of the influence of impounding water upon malaria incidence is being conducted by the state.

Georgia—Control work this year by the state comprised service to 40 municipalities and was directed against all species of mosquitoes and toward enforcing regulations relative to the impounding of water.

Florida—Mosquito breeding in the mangrove areas along the east coast received special attention and beach cities gave considerable thought to the curtailment of mosquito production in adjacent areas. The control district of Indian River County spent $4,000 and supported a bond issue of $100,000, which however, has not yet been validated. Seventeen cities serving one-quarter of the population of the state engaged in concentrated work with good results. Several marsh areas were transformed into lakes. Three counties engaged in salt water mosquito control work. The women's clubs were active in educational work. Outstanding features include the adoption of machinery for oiling, the arousing of much public interest and coöperation, the adoption of the method of charging cost against land benefited

in some sections, and the elimination of malaria and dengue fevers in Daytona Beach.

New York—The only organized work in the state is confined to sections of Nassau County and New York City and is conducted by the Nassau County Mosquito Extermination Commission and the New York City Board of Health. Control covers the entire county of 307 square miles with 20,000 acres of salt marsh, 2 cities and 50 villages. The outstanding feature of the work is the reduction of malaria from 476 cases in 1916 to an average of 2 cases for the past 6 years and the development of machinery for catch basin spraying. The problem in New York City is principally one of annoyance. Construction of new roads without proper culverts established new breeding places. Oiling operations by truck were extended and a portable pump used for draining most areas which could not be filled.

Connecticut—Interest in mosquito control has increased during the last 2 years, although the problem here is limited to non-disease carrying mosquitoes. Salt marshes in 3 towns were ditched, using both public and private funds, and other acreage previously ditched was maintained either under state supervision or through local assistance. In New Canaan oiling proved satisfactory.

Rhode Island—In 1925 and 1926 the state appropriated $30,000 per year to be available to municipalities on a 50-50 basis for mosquito control work. However, in 1925, 31 per cent of this amount was withdrawn and in 1926, 23 per cent. This year only $15,000 was appropriated but nothing was withdrawn. This decrease in expenditures indicates a parallel decrease in sentiment for mosquito control. The State Commissioner of Public Health, believing the problem one worthy of attention, has endeavored to create favorable public sentiment.

Massachusetts—The principal problem in this state is that of salt marsh mosquitoes. The only control work effected in recent years has been that which resulted indirectly from the operations of the Massachusetts Drainage Board which is conducted for the purpose of improving agricultural areas.

Pennsylvania—The problem is reported as being local in nature, of minor importance and handled by local authorities.

Kentucky—The only work carried on this year was in connection with the Mississippi River Flood and consisted of draining and oiling pools. The State Board of Health has been unable to organize anti-mosquito work on account of insufficient personnel.

Tennessee—Malaria problems lie principally in the western part of the state covering an area some 100 miles square. Culex are also

found in this and several other sections. Although general mosquito control work was carried on in some 20 cities and towns, malaria control is the principal activity and was conducted on a county-wide basis in 5 of the western counties with the most highly concentrated work in Shelby County. A quantity of oil for use in 3 of those counties flooded by the Mississippi River overflow and some $5,300 for screening was supplied by the National Red Cross. Activity is also reported in 4 cities in the central part of the state. Paris green dusting and Gambusia play an important part in control operations.

Missouri—Malaria is present to some extent in all parts of the state but is an important factor principally in 7 counties in the southeasterly section, which also applies to the pest mosquito. Due to insufficient personnel and funds control plans are developing slowly, the present activities being limited to educational campaigns.

New Mexico—Anopheles are found in only two localities although mosquito breeding is common along the Rio Grande. Malaria prevails in Dona Ana County and in a small section north of Santa Fe. Only one city has undertaken systematic control work with money obtained by popular subscription. Airplane dusting is to be considered next year.

Idaho—Some pool drainage was done by a few cities. Malaria is not a factor.

Maryland—Survey of one summer resort and town was made and oiling operations were conducted in another town. The problem is principally one of pestiferous mosquitoes.

West Virginia—Occasionally there are complaints from communities because of mosquitoes but the causes of such complaints are easily determined and corrected.

Dominion of Canada—Mosquitoes are reported throughout the Dominion and have been found in large numbers in several sections. It appears that malaria is not a factor. The Department of Agriculture is active in control work.

Nova Scotia—No organized control work has been attempted.

New Brunswick—Control measures have been of an incidental nature, such as the drainage of ponds and swamps.

Quebec—In 1926 a swamp in Montreal was given one application of oil, but operations were not entirely effective due to the extent of the problem and the lack of funds. It is understood that this work is to be continued this year.

Ontario—The city of Ottawa made an appropriation in 1926 for preliminary control work by local boards of health. The invasion of mosquitoes from outlying areas somewhat nullified the work. A mix-

ture of oil and caustic soda gave good results and dusting with powdered derris root was found to be effective. A small amount of money was spent for drainage and oiling this year.

Manitoba—The Winnipeg Anti-mosquito Campaign Committee gives coöperation with some other agencies and is carrying on an active and effective control campaign.

Saskatchewan—Health authorities in this province have said that malaria was not considered in their program and therefore control work was not inaugurated by them.

Alberta—At Banff, the Department of Agriculture has been successful in control operations using oil and gambusia. The Provincial Health authorities have done no such work.

British Columbia—In this Province there is a rich agricultural area where spring and summer freshets establish a 14,000-acre breeding area. The Department of Agriculture recommends permanent diking and draining.

GROUP No. 2—States in which the mosquito control problem exists with no control being done:

Kansas—Mosquitoes of the pestiferous species are present but were not so prevalent as when conditions for breeding were more favorable. The State Department of Health has sponsored a mosquito radio talk.

Indiana—Although no organized work is carried on, extensive drainage operations conducted for agricultural purposes and real estate developments have indirectly resulted in good.

Delaware—Mosquitoes of the irritating varieties are present in abundance but the problem of control would embrace 80,000 acres of salt marsh in addition to the usual fresh water breeding places. An educational campaign is contemplated as a preliminary step to active work.

Iowa, Wisconsin, Minnesota, Wyoming—It appears that malaria is not a factor in any of these states and that no organized control work has been instituted.

Oregon—Due to a late high tide, mosquitoes were more abundant this year than usual. There was also a slight increase in the number of cases of malaria although the total was not high. Efforts to secure protective legislation have not been successful.

Washington—It appears that the mosquito problem is not of sufficient weight to merit the expense of control work.

Alaska—Mosquito production in the interior is exceptionally large The population of the territory is so small in comparison with the area

that control is almost economically impossible. It is understood that there is no malaria problem.

GROUP No. 3—States claiming to have no problem:

Maine, New Hampshire, Vermont, Ohio, Michigan, North Dakota, Montana and Colorado.

GROUP No. 4—States from which data are not available:

Oklahoma, Arkansas—In these two states the records indicate a malaria problem.

South Dakota, Nebraska, Utah, Nevada and Arizona—It is believed that malaria prevails to some extent in some of these areas with more or less trouble from pestiferous mosquitoes.

There has been a marked reduction in mosquito production generally since last year. It appears that there is a decided increase in sentiment for mosquito control work in North America and that such work is being directed more and more against all species of mosquitoes. Machinery is coming into further use in extensive control work and as a means to an end, enabling legislation is being enacted in additional states.

In view of the very encouraging progress recorded the committee limits its recommendations to continuance of progress in this important adjunct of public health engineering: the enlarging of abatement work of a permanent nature; securing the fullest possible coöperation of the public through the formation of state and local anti-mosquito associations, radio publicity, motion pictures, etc.; seeking favorable legislation where none exists and recommending the adoption of appropriate regulations in roadway and other public developments whereby mosquito breeding places will be built-out instead of built-in.

LEWIS E. JACKSON, *Chairman* F. W. GREEN
H. W. VAN HOVENBERG J. L. CLARKE
E. L. FILBY

Course in Psychiatric Work

A one-year postgraduate course in welfare work in Germany with mentally abnormal children, open to physicians, teachers, clergymen, and child welfare workers, was to be started on January 1 of this year under the auspices of the German Association for Psychiatric Work among Children. *Zeitschrift fur Schulgesundheitspflege*, Leipzig, 12:559, 1927.

Montana's Laboratory for the Study of Insect-Borne Diseases

R. A. COOLEY

Secretary, Montana State Board of Entomology, Bozeman, Mont.

PROBABLY there does not exist another research laboratory like the one of the Montana State Board of Entomology now nearing completion at Hamilton. The field of work as laid down in the Act which created this board in the year 1913, is "to investigate and study the dissemination by insects of diseases among persons and animals, said investigation having for its purpose the eradication and prevention of such diseases," and the new laboratory is designed and equipped, so far as is possible within the available fund, to perform the necessary studies connected with insect-borne diseases. The Act authorizing the erection of this laboratory, signed by Governor Erickson on March 16, 1927, appropriated the sum of $60,000. The building is a brick faced, reinforced concrete structure of three stories, 40 feet by 66 feet on the ground. A one-story wing 88 feet in length is attached to the west and is designed for the care of stock laboratory animals. The building is made without a basement in order that it may be as sanitary as possible, and to have as few places as possible where insects or rodents may hide away. The construction throughout is such as to avoid cracks and sharp corners. The boiler burns oil and is automatic and certain of the rooms have automatically controlled temperatures. While the building is planned generally for the field of medical entomology, and closely associated lines, it is laid out particularly for the needs immediately before the state. The common wood-tick of the region, *Dermacentor andersoni Stiles,* and the diseases of man and the losses in livestock of which it is the cause, constitute the immediate problem.

The work on Rocky Mountain spotted fever is being conducted under an informal plan of coöperation between the U. S. Public Health Service and the Montana State Board of Entomology. At the present time the U. S. Public Health Service is concerned mainly with a further study of the Spencer-Parker vaccine. This vaccine, made from the bodies of infected ticks, was originated two years ago at the old, improvised laboratory at Hamilton and at the Hygienic Laboratory at Washington, D. C., by the two U. S. Public Health Service workers whose names it bears. It now has been used on about 4,000 persons in Montana, Idaho and Wyoming, with uniformly encouraging results. The U. S. Public Health Service is also giving attention to the study of

the organism of spotted fever, *Dermacentroxenus rickettsi Wolbach*, and other organisms found in ticks; characteristics of the virus of spotted fever, with particular references to differences in ticks and in various laboratory and wild mammals; relationships of the rabbit tick, *Haemaphysalis leporis-palustris Packard*, in the spotted fever complex, tularemia, and tick paralysis in man and domestic animals. Some years ago the entomologist of the State Experiment Station at Bozeman, in coöperation with Dr. W. D. Hunter, Dr. F. C. Bishopp and Dr. W. V. King of the U. S. Bureau of Entomology at Washington, worked out the life history and host relationships of the wood-tick. Since that time the entomologist of the Board of Entomology has done further work on its biology, particularly with reference to its reactions to temperatures. During the past year the entomologist has been engaged in a study of the French tick parasite, *Ixodiphagus caucurtei* Du Buysson, introduced into Montana with the assistance of Dr. Brumpt and Dr. Larrousse of the University of Paris, and Dr. S. B. Wolbach of the Harvard Medical School of Boston. Particular emphasis is to be given to the work on this parasite during the next few years and an effort will be made to find other parasites, particularly in Africa.

The U. S. Public Health Service is represented in Montana by Dr. R. R. Spencer, officer in charge, and by Entomologist R. R. Parker, Special Expert. The State Board of Entomology is *ex officio* and composed of Dr. W. F. Cogswell, Secretary of the State Board of Health, *Chairman;* Dr. W. J. Butler, State Veterinary Surgeon, *Member*, and R. A. Cooley, State Entomologist, *Secretary*.

A feature of the spotted fever studies in Montana is that they are planned and carried out with careful reference to field conditions. It is for this reason that the new laboratory was erected at Hamilton in close proximity to regions where Rocky Mountain spotted fever is found. Field conditions may be thus easily studied, materials for study may be brought in, and parasites may be bred and quickly liberated.

Laboratory work on spotted fever has always been dangerous for the workers. Up to the time that the Spencer-Parker vaccine was developed there had been 4 cases of laboratory infection with the disease in Montana (3 at the field laboratories and 1 in Helena). All of these cases were fatal. Since we have had the vaccine there have been 7 laboratory cases and 6 of these have recovered. It is now indicated that the vaccine gives full protection against all strains of the disease excepting the more virulent one in the region near the laboratory, and sufficient protection in the majority of cases to insure recovery from infection with the more virulent strains. It is hoped the new laboratory with its modern conveniences will afford much better protection for the

workers than was possible in the one being abandoned which was a vacated schoolhouse.

The new building provides an incinerator for the disposal of dead animals and all waste; a specially adapted laundry and drying equipment for the cleaning and drying of the numerous cloth bags used to confine the ticks on laboratory animals; dressing, locker and shower rooms for the use of workers, who are expected to make a change of clothing on coming from the field and on leaving the laboratory; a shop for the making of cages and other equipment; a poison room for mixing and drying poisoned grain to be used in the destruction of certain rodents; and quarters for the custodian. A special feature of the equipment is a series of three refrigerator rooms cooled by a Frick ammonia machine. These rooms are cork walled and are automatically maintained at 40° C., 40° C. and 0° C. respectively. In these rooms are fifteen thermal cabinets automatically maintained at graded temperatures ranging from 0° C. to 37° C. These cabinets will be put to a variety of uses including storage and incubation of cultures, virus, and vaccine, and experimental work on ticks and parasites.

During the season of 1928 we hope to rear and liberate at least 1,500,000 parasites, which involves the holding of a large number of parasitized ticks, and we have found that within certain limits we can bring them out when we want them by varying the holding temperature.

The building provides several rooms in which laboratory animals such as guinea pigs and rabbits, and wild rodents such as ground squirrels, mountain rats and wild rabbits of various kinds, will be held in cages stacked in steel frames. The production of vaccine in quantity involves the feeding of a very large number of infected ticks, as well as numerous tests on guinea pigs. Many of the experiments on the virus and the studies of the organisms require the use of laboratory animals. In the parasite work it is necessary not only to parasitize the ticks while they are on animals but also to rear the ticks which are to be parasitized. To prove that parasites have been established in the experimental field areas and determine the percentage of parasitized ticks, wild rodents must be trapped and held in cages until the ticks drop off.

It is thus necessary to hold a very large number of animals in cages in the screened and guarded laboratories. This requires the daily feeding of animals, often the taking of their temperatures, and at all times the keeping of the cages and rooms in a clean and sanitary condition.

There are also provided two general laboratories equipped with facilities for chemical and bacteriological studies. For the grinding of infected ticks and further preparation of the vaccine, a special room with suitable facilities is provided. There are also furnished office and

record rooms and a photographic room. The rabbit hutches in the animal wing deserve special mention as they are made in keeping with the established practice of rabbit breeders in the Northwest. These hutches are built in four tiers facing a hollow square or court. While the four walls of the building are complete, the roof is left off in the portion over the court thus practically exposing the animals to the open air, which exposure growers have found keeps rabbits in a healthier condition. The guinea pig room is of tighter construction and is given a small amount of heat. A root cellar is under this room.

Rocky Mountain spotted fever occurs, in addition to Montana, in the following states: Idaho, Wyoming, Utah, Colorado, California, Nevada, Washington, Oregon, North Dakota and South Dakota. In spite of this general distribution in the Northwest the people of the United States rather generally look upon the disease as being peculiar to Montana. This is due to the fact that most of the investigations have been conducted in Montana, and also to the fact that there exists an area in western Montana where the disease is more virulent and fatal than elsewhere. In western Montana, particularly, spotted fever has been looked upon as a "mystery disease." The brilliant work of Dr. H. T. Ricketts removed some of this mystery and pointed the way for further study. The excellent work now being done by the U. S. Public Health Service is further explaining the peculiarities of the disease.

Including the highly trained specialists and their helpers, in this country and in other countries, there have been 7 deaths from laboratory infection with the Rocky Mountain spotted fever. This is probably a record. These deaths have contributed an air of romance to the disease and popular writers have found spotted fever in Montana a fertile subject. Much or most of what has been written is true if taken as separate statements. But selected statements set forth without telling all of the facts, and made in highly colored language, have created a false impression, which is hurting the State of Montana both in its reputation as a place of residence and also economically.

The Board of Entomology has pursued a policy of fearless truth telling, believing this to be the best way to overcome an unreasonable fear that some persons seem to have. Spotted fever does occur in Montana rather generally though there is a small total of cases. There were 36 in 1927, and this number compares favorably with many other diseases. Ticks are common in many parts of Montana but ticks are common in places all the way through to the Atlantic Ocean.

The State of Montana expects to continue its studies of the tick and spotted fever and the new laboratory here described may be taken as an earnest of the state's desire to remedy the situation which exists.

Pathology, Prophylaxis and Treatment of Subtertian Malaria

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THE report embodied in this paper is based on the detailed examination of 1150 cases, and covers a period of 9 years. The early experiments were carried out in Sierra Leone during 1916 to 1918, at the instigation of Sir Ronald Ross, but the exigencies of war service made consecutive work difficult, while the influenza epidemic of September, 1918, broke the continuity of many of the experiments. The investigations were continued in the West Indies and in Venezuela.

Little that is new in our knowledge of the disease is claimed for this report, but accuracy of experiment and observation has been the aim throughout, and the correlation of symptoms with laboratory findings may prove of interest.

Three problems interested us at the outset:

1. The value of quinine in prophylaxis
2. The biological properties of the gamete
3. The causes of the changes in certain essential organs, giving rise to the syndrome called the pernicious attack

The solution to these important questions might suggest a rational form of treatment whereby localization of the disease to one or more organs could be prevented, or if present, relieved. The organisms were studied in hanging-drop and fixed preparations, and the polychrome stains employed were those of Senevet and Wright's modification of Leishman's method.

From various groups, at different times and in different localities, new arrivals in the tropics, and numbering 627, the following observations were made:

1. Red blood count
2. Hemoglobin index
3. Absolute and Differential Leucocyte count
4. Blood Pressure
5. Coagulation time of the Blood
6. Urine Examination

These were divided into three batches:

NOTE: Acknowledgment is made of the invaluable assistance of the noncommissioned officers and men of the R. A. M. C., Tower Hill, in the collecting and staining of blood films; especially are my thanks due to Sergeant Trehearne and Corporal Williams, whose enthusiasm and practical ability made possible what turned out to be a difficult and painstaking task.

A. 209 received prophylactic quinine (5 gr.) daily
B. 209 received an iron and arsenic tonic daily
C. 209 received no prophylactic treatment

At the end of the first month, the number and percentage of cases admitted to hospital or clinic were:

Group A. (31) . . . 14.9 per cent
Group B. (34) . . . 16.2 per cent
Group C. (39) . . . 18.6 per cent

Treatment during the attack consisted in the adminstration of quinine intravenously, 0.15 gr., or by the mouth, 0.30 gr., daily. The average duration of treatment was 10 days. On discharge, the experiment was continued.

At the end of the 2nd month:

Group A. (42) . . . 20 per cent Relapses or reinfections 2.2 per cent
Group B. (32) . . . 15.5 per cent Relapses or reinfections 6 per cent
Group C. (60) . . . 28.8 per cent Relapses or reinfections 9 per cent

Treatment as before was instituted, and the average duration in hospital or clinic was 9 days.

At the end of the 3rd month:

Group A. (33) . . . 16 per cent Relapses or reinfections 6 per cent
Group B. (29) . . . 14 per cent Relapses or reinfections 3.5 per cent
Group C. (32) . . . 15.4 per cent Relapses or reinfections 4.2 per cent

It will be noted that the relapses are given as percentages of the whole group.

Total number and percentages of cases treated or undergoing treatment at the end of 3 months:

Group A. (106) . . . 51 per cent
Group B. (95) . . . . 45.4 per cent
Group C. (131) . . . 62.7 per cent

Total relapses or reinfections at the end of three months:

Group A. (17) . . . 8.2 per cent
Group B. (20) . . . 9.5 per cent
Group C. (28) . . . 13.2 per cent

After the 3rd month, patients from all groups received a prophylactic dose of 10 gr. of quinine daily. The admission rate for old and new cases fell to 9 per cent per month.

No. 39 TABLE I

NAME	DATE	B.P.	R.B.C.	L.C.	H.I.	C.T.	Urine	Fever	Spleen	Localization Signs
Gnr.K.	30-5-18	124	5,280,000	6,700	0.9	5m. 10s.	N	Observations on arrival at Tower Hill		
	18-6-18	110	4,100,000	11,300	0.6	6m. 5s.	N	3 days	Enlarged	Vomiting and Diarrhea
	20-6-18	115	3,600,000	6,200	0.5	7m. 2s.	N	Remittent	Enlarged	None
	22-6-18	120	4,160,000	5,700	0.65	6m. 4s.	N	None	Enlarged	None
	25-6-18	128	4,850,000	6,400	0.7	6m.	N	None	Not palpable	None
	28-6-18	130	5,300,000	7,100	0.85	5m. 30s.	N	None	Not palpable	None

Rings not found after the 2nd day.
Treatment: Quinine intravenously (0.15 gr.) on 1st day, then 0.30 gr. daily by the mouth.

On admission to hospital or clinic, the observations on the blood and urine were repeated, and continued every 2 days until the patient's discharge. Additional notes made included:

Localization of symptoms
Duration of pyrexia
Enlargement of spleen
Increase in large mononuclears

Table I represents a typical record sheet, while Tables II to IX, summarize the results obtained in the whole series (1150).

TABLE II
Blood Pressure

		Per cent
1. No fall	(83)	8
2. 5-10mm.	(105)	9
3. 10-15mm.	(220)	19
4. 15-20mm.	(474)	41
5. 20-25mm.	(163)	14
6. 25-30mm.	(69)	6
7. Over 30mm.	(36)	3

TABLE III
Red Blood Count
Loss

		Per cent
1. Under ½ million	(46)	4
2. ½-1 million	(356)	31
3. 1-2 millions	(506)	44
4. 2-3 millions	(207)	18
5. Over 3 millions	(35)	3

TABLE IV
Leucocyte Count

		Per cent
1. Persistent Leucocytosis	(80)	7
2. Leucocytosis, followed by leucopenia	(817)	71
3. Leucopenia from outset	(253)	22
Relative and absolute increase of large mononuclears	(494)	43

TABLE V
Hemoglobin Index

		Per cent
.8	(276)	24
.7	(437)	38
.6	(264)	23
.5	(173)	15

and under.

TABLE VI
Urine (albumen)

		Per cent
1. No albumen	(836)	73
2. Trace	(184)	16
3. ½-1 per cent	(81)	7
4. 1-2 per cent	(31)	2.7
5. Persistent	(18)	1.6

TABLE VII
Duration of Pyrexia

		Per cent
1. Under 24 hours	(35)	3
2. 24-36 hours	(218)	19
3. 36-48 hours	(242)	21
4. 48-60 hours	(368)	32
5. 60-72 hours	(161)	14
6. Over 72 hours	(126)	11

TABLE VIII
Splenic Enlargement

		Per cent
1. Not palpable	(264)	23
2. Palpable during paroxysms	(828)	72
3. Persistent enlargement	(58)	5

TABLE IX
Localization Signs

1. Gastrointestinal	(125)	11 per cent
(a) Dyspepsia	(56)	
(b) Pseudo-dysentery	(49)	
(c) Cholocystitic	(11)	
(d) Choloraic	(7)	
(e) Appendicular	(2)	
2. Skin	(125)	11 per cent
(a) Herpes Labialis	(47)	
(b) Hyperpigmentation	(61)	
(c) Diffuse Erythema	(14)	
(d) Purpura	(3)	
3. Cerebral	(73)	6.3 per cent
(a) Delusions	(32)	
(b) Polyneuritis	(13)	
(c) Comatose	(11)	
(d) Meningitic	(8)	
(e) Mental	(4)	
(f) Cerebellar	(3)	
(g) Hemiplegic	(2)	
4. Urogenital	(42)	3.6 per cent
(a) Malarial Hemoglobinuria	(22)	
(b) Nephritis	(18)	
(c) Orchitis	(2)	
5. Circulatory	(29)	2.5 per cent
(a) Tachycardia	(19)	
(b) Arrhythimia	(8)	
(c) Anginal	(2)	

Examination of these record cards brings out the following points:

1. Anemia is marked and progressive during the first week of the attack, but as a rule recovery in new cases is prompt.

2. The blood pressure, at some period of the paroxysm, is lowered almost invariably. There is a marked relationship between a low blood pressure and localization of symptoms.

3. After a preliminary leucocytosis, leucopenia is the rule, and in the majority of the readmissions there is a relative and absolute increase in the large mononuclears.

4. The coagulation time of the blood is sometimes increased, sometimes unaffected, and more rarely decreased.

5. In the majority of the cases rigors are not marked.

6. The temperature charts are very irregular in first attacks, but become more frankly intermittent in the relapses.

7. The rate of hemolysis is less marked in the relapse, although the anemia is as a rule more profound.

8. Where quinine prophylaxis (gr. 5) daily has been given, the clinical symptoms of an attack are often more intense, and the immediate reaction to quinine less effective than when no prophylaxis is employed. This is more noticeable in first attacks.

9. The addition of iron and arsenic to the prophylactic quinine, although it did not materially decrease the number of admissions, diminished the amount of anemia associated with the attack.

10. In areas where malaria infected mosquitoes are numerous, quinine in 5 gr. doses is insufficient to prevent an attack. By doubling the daily dose the incidence is much reduced (40 per cent less in one locality).

11. Quinine treatment by the mouth, provided there is no vomiting, seems to be as efficacious as by any other route.

12. The more marked the anemia the greater the tendency to localization of symptoms.

In order to determine whether the prophylactic doses of quinine or the much larger therapeutic doses would of themselves produce anemia, 10 volunteers, none of whom had suffered from or were exposed to malaria, were given 30 gr. of quinine a day for 3 weeks. In no case did this dose have any hemolytic effect.

The increased coagulation time of the blood suggested that a calcium salt might be a useful adjunct in treatment, but experiments carried out after the administration of large doses of calcium chloride produced no effect whatever either on the coagulation time or on the general condition of the patient.

The lowered blood pressure, combined with the post-mortem findings in the viscera of malarial cases, in which small infarcts were frequently present, suggested that good results might follow by raising temporarily the blood pressure with a view to dilating the capillary vessels, and so preventing or reducing this blocking and concentration of toxins. The intravenous injection of large quantities of isotonic

saline in some of the more severe pernicious cases seemed to be efficacious, but better results were obtained by infusing a saline solution containing an osmotically active colloid, such as gum acacia. To these solutions quinine in varying doses was added (10-20 gr.). In a few of the cases the temperature dropped in the course of a few hours and did not rise again; in others, localization symptoms disappeared rapidly after the injection.

Turning now to the biological properties of the gamete, Schaudin's speculation that the relapse in malaria was due to parthenogenesis, the macrogametes being converted into schizonts and then starting a new asexual cycle, seemed plausible. But the evidence given below tends to support the view of Sir Ronald Ross that the parasites are capable of survival for long periods in the viscera, and that a partial immunity exists which, under certain conditions such as fatigue, excesses etc., is broken down.

As late as 1918, the authors of *Malaria in Macedonia* summed up their conception of the rôle of the gamete as follows:

> The hematozoan also gives rise to certain elements whose rôle is all important, known as gametes (sexual form). These elements are formed at the expense of the schizonts and ameboid bodies, which instead of dividing into rosette bodies, become transformed into a body which is either rounded (in *Plasmodium vivax* and *Plasmodium malariae*) or falciform (in *Plasmodium Falciparum*), and is soon set free in the circulation. This body, which is the gamete, possesses two extremely important biological properties. In the first place, it is responsible for the chronicity of malaria in the human organism, and secondly, it is the cause of the persistence of malarial epidemics throughout the globe. The gamete is extremely resistant to quinine, while the vegetative forms (schizonts, ameboid bodies and rosette bodies) are destroyed by the drug, the gametes may persist in the organism for months or years. Now under certain conditions, when the organic resistance gives way, under the influence of fatigue or meteorological circumstances, the gametes, which had hitherto remained quiescent, like parasitic cysts, begin to divide, and by multiplication of their nuclei give rise to rosette bodies, the rupture of which sets free the merozoites. The latter at once attack the red corpuscles, increase in size and number and the ordinary cycle of schizogony is reproduced. This special process of segmentation is called parthenogenesis of the gametes. This is the ordinary process in relapses in malaria. It can easily be understood that so long as these special elements persist in the organism, the patient is exposed to a relapse, and it is in this sense that it may be said that the gamete, and the gamete only, keeps up the chronicity of the disease.

The evidence for these conclusions seems to me unsatisfactory. My researches into this problem resulted as follows:

1. Despite Karrawy's observation that he found parthenogenesis to occur in *Plasmodium vivax* at the height of the paroxysm, most careful examination of thousands of films and hanging-drop preparations in a large number of malarial cases, has failed in every instance to show anything suggestive of retrogressive schizogony. When gametes existed in the peripheral circulation, a double infection

of a corpuscle with a schizont and a gametocyte was not infrequently observed.

2. Post-mortem examination of smears from the viscera—spleen, liver, brain, bone-marrow—in cases known to be free from the clinical manifestations of malaria for at least 3 months before death, but all of whom were chronic malaria subjects, showed the capillaries filled with blood containing parasites and leucocytes with pigment; the red cells of the splenic pulp contained schizonts and crescents.

3. Provocative attacks of malaria were produced by the intravenous injection of adrenalin in 3 out of 6 cases whose peripheral circulation showed an excess of large mononuclears and pigmented leucocytes, but no plasmodia.

4. Splenic puncture in 10 cases with moderately enlarged spleens, in whom the clinical manifestations of malaria were absent, and crescents only could be found in peripheral blood, demonstrated the presence of sporulating forms on the films of 6.

5. A Syrian was admitted into hospital with amebic dysentery. On examination, his blood was found to be swarming with crescents, and in spite of prolonged examination of more than 100 films, no plasmodia could be discovered. There had been no clinical evidence of malaria for many months. By means of a Pravaz syringe, blood from this subject was injected directly into the basilic veins of 5 members of his family who lent themselves for the experiment, in quantities of 1 c.c., 2 c.c., 4 c.c., 6 c.c., and 8 c.c. In no case did these injections produce an attack of malaria. Sometime later, 0.5 c.c. of blood containing plasmodia from a case of sub-tertian malaria was injected into this Syrian. Within 10 days he was readmitted with a typical paroxysm, his blood swarming with plasmodia. Finally, 0.5 c.c. of his blood, containing the plasmodia, was injected into the members of his family previously inoculated with crescents. Four out of the 5 developed an attack within 2 weeks.

While the series of experiments and observations just described cannot be considered as conclusive evidence against parthenogenesis, I submit that they are sufficiently suggestive to make us hesitate before accepting Schaudin's view.

Of the fact that quinine in sufficient dosage kills the crescents in time, there can be no doubt. In one series of cases, 109 natives, whose peripheral blood showed numerous crescents but no plasmodia, were given 30 gr. of quinine a day with the following results:

Shortest time required for disappearance of crescents—5 days
Longest time for their disappearance—28 days
Average time required—17.5 days

Safe Water for Tourists

MICHIGAN began its annual roadside water survey earlier this year than usual so that tourists will be safeguarded against polluted and contaminated water and the safe water supplies will be posted before the tourist season is in full swing. Two men are sent out to collect samples of water which are sent to the state laboratory for analysis. A third man is sent out a couple of weeks later to post the supplies found safe upon analysis with a "Safe Water" sign.

Carrying Health from the Clinic to the Community

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THE Health Extension Department of the Community Health Center of Philadelphia, in its effort to develop a health program that would reach and interest a variety of groups throughout the community, has had a very interesting experience. Our aim is to give a working knowledge of fundamental health rules for everyday use and to stress the preventive side of health work.

The Community Health Center, supported by the Federation of Jewish Charities, was organized in 1921, upon the recommendation of Michael Davis, Ph.D., after he had made a survey of the medical resources within the Federation. It is located in the same building which houses several large case work agencies of the Federation. The Community Health Center functions as a health clearing bureau for the social agencies of the Federation, whose clients come to it for complete physical and mental examinations, as well as dental care.

All examinations are made by appointment through the agency sending the clients. Before the examination the health center receives from the agency a history of the family, in addition to the social and health record of each individual to be examined. With these facts for reference the necessary laboratory tests and examinations are made. Finally, a full report of the examination, together with definite recommendations, is sent to the agency. In the Mental Hygiene Department we include psychological, psychiatric and child habit clinics.

The examining staff is composed of salaried specialists working part of the day at the Community Health Center. There are 4 physicians (2 men and 2 women), 1 psychologist, 2 psychiatrists, 1 clinical pathologist, and 2 dentists. In addition, a psychiatric social worker, a nutrition worker, an oral hygienist and adequate clinical and laboratory assistants and a clerical staff give full time. There is also a volunteer staff of clinical secretaries and clerical workers.

The health instruction and teaching is given first by the physician during the examination and is supplemented by the health center social worker, who also explains the recommendations made by the doctor. This is further followed up by the agency worker who is originally

responsible for referring the patient to us, and who (since our medical work is diagnostic in character) also does the refer and follow-up work through existing resources of hospitals, dispensaries, and private physicians. A food demonstration is held during clinic hours once a week. One nutritious dish is selected from the daily menu chart and prepared in the clinic, recipes in English and Yiddish distributed, and the food served to all the mothers and children present at the time.

In our health extension program we tried to cover as many sections of the city as possible and to organize groups of different types in each section. We succeeded in reaching the following groups:

A Yiddish speaking Mothers' Club, with an average attendance of 35. The importance of, planning, preparing and serving well balanced meals was discussed. Colored charts were used to illustrate menus, and recipes in English and Yiddish distributed.

Two groups of working girls in different sections of the city were interested. One, a group of 12, was organized as a weekly Supper Club. A course meal at a minimum cost of 25 cents each was prepared by the girls. Each member was responsible for some part of the evening's program. Not only was this an opportunity to teach how to prepare a well balanced meal and how to serve it, but the duties and courtesies desirable in a hostess were explained. Once a month there was, as an invited guest to dinner, a specialist in some field of health work. Thus, care of the teeth, good posture, personal hygiene were each in turn discussed. When the group disbanded for the season complete physical examinations were made, at the Community Health Center and in some instances by private physicians, and defects corrected. In one instance a psychiatric study was deemed necessary.

The second group, which met monthly, consisted of all the girls in the clubs of one of our settlements. There was an average attendance of over 100 girls from 16 to 20 years of age. Notices of the meetings were usually posted in advance as talks on "Charm and Beauty," "How to Dress," "Etiquette," etc. Through these topics health discussion was stimulated, resulting in definite questions regarding individual health problems and the advantages of health examinations, and in some instances voluntary requests for complete physical examinations.

A Health Story Hour in one of the playgrounds is held weekly. This is a mixed group of white and colored, the former usually of foreign born parents. The age group is between 6 and 10 years, and the average attendance over 60 children. It is remarkable to hear the health story repeated by the children the week after its presentation by the worker, and to realize how they have absorbed definite health rules presented in this fashion. Several mothers came voluntarily to meet the

"teacher" and tell just how the children were trying to live up to health rules.

A Health and First Aid Club is held weekly in one of the Hebrew schools. The group consists of 15 adolescent girls, 13 to 16 years old. Upon the request of the girls several sessions were devoted to sex education. One meeting was devoted to general discussion, after which the girls wrote their questions and placed them in a box for the worker to answer at the following meetings. Later the mothers of two of the girls personally thanked the worker, saying that they were grateful for the instruction that had been given since they themselves had been unable to discuss the subject with their daughters. These children not only come from the better type homes where parents are interested and coöperative, but mingle with a like group, and through their interest and activities in the club spread health thoughts and rules to a group we probably would never reach otherwise.

Recently a posture class for a limited group of children from 8 to 13 years, referred from our clinics, has been organized, and two preschool groups in nursery schools are taken over one period a week by the health worker. Mothers of these children have formed a Mothers' Club.

During health week special programs were arranged for each group and we succeeded in inaugurating periodic health examinations for the members of the staffs of the organizations housed in the building, except where individuals were already under the care of private physicians.

In the past 6 months we have reached an average of over 300 individuals outside of the health center each month through the various clubs, classes and lectures. These are in addition to those coming to our medical, mental and dental clinics for original and reëxaminations. We have examined 4,895 in our Medical Department, 1,404 in our Mental Department, and have given dental care to 6,182 during the past year. It is not, of course, possible to estimate the number reached indirectly through the extension work. Requests for a continuation of the clubs and classes have been made and we are encouraged by the thought that health information has been spread and taught through the various activities and are considered of sufficient value to be continued.

Incidence of Tuberculous Infection in Children from Rural Districts*

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UNTIL 1924 when Slater reported the results of the von Pirquet tuberculin test on children in a rural community in Minnesota, all of the statistics on the percentage of positive tuberculin reactions in children were compiled from data from clinics in the large cities of this country and Europe. Slater reported only 10 per cent of positive reactions as compared with 50 to 80 per cent of positive reactions reported by continental clinics and clinics in New York City.

The question arises whether any of these figures can be accepted as representative of the percentage of children giving a positive reaction to tuberculin, because in one case the tests were given only to children living in a healthy, wealthy rural community where the incidence of tuberculosis was low and the danger of infection slight, and in the others to children from the large cities, generally from the poorer, congested districts where there was obviously greater opportunity for tuberculous infection to occur.

At the Mayo Clinic we have an opportunity of examining children from many different sections of the country and from all types of environment. Since a tuberculin test is done as a routine in the case of every child who registers in the Section on Pediatrics, it might be valuable to collect data on the results of tuberculin tests from a larger group, geographically speaking, than is covered by any of the data available at the present time.

This study was made to determine the results of tuberculin tests on children coming from rural and semi-rural districts. The results reported were collected from a study of the histories of 1000 children between the ages of 6 months and 15 years, living in communities with a population of less than 25,000 and coming from 35 states, Porto Rico, Mexico, and Canada. All cases in which there was any evidence of active tubercular lesions were excluded.

In the 1000 cases there were 169 (16.9 per cent) in which the tuberculin reaction was positive. There were 532 boys, and of these 15 per cent gave positive reactions; 468 were girls and of these 19 per

* Presented at a meeting of the Northwest Pediatric Society, Rochester, Minn., July 16, 1927.

cent gave positive reactions. Table I shows the results of the 1000 tests with the number and percentage of positive reactions according to age groups. A study of this table will show that there was a slightly higher percentage of positive reactions among the girls. Except for 3 girls aged 1 year, no positive reactions were recorded for children less than 2 years of age. While there was no striking increase in the percentage of positive reactions with the increase in age, the percentage of positive reactions among girls from 2 to 5 years of age was greater than among the boys of that age, and this balance persisted throughout the series. Slater reported practically the same observations.

TABLE I

POSITIVE REACTIONS IN THE DIFFERENT AGE GROUPS

Age, years	Boys			Girls		
	Cases examined	Positive Reaction Cases	Per Cent	Cases examined	Positive Reactions Cases	Per cent
0.5-2	21			13	3	23.0
2-5	110	11	10.0	99	13	13.1
5-10	220	36	16.3	186	32	17.2
10-15	181	33	18.2	170	41	24.1
Total	532	80	15.0	468	89	19.0

TABLE II

ANALYSIS OF CASE HISTORIES OF PATIENTS WITH POSITIVE REACTIONS

	Boys		Girls	
	Cases	Per Cent	Cases	Per Cent
Positive reactions	80	15.0	89	19.0
History of exposure	8	10.0	7	7.8
Family history of tuberculosis	16	20.0	17	19.1
No history of tuberculosis or contact	56	70.0	65	73.1
Overweight (5 per cent or more)	14	17.5	12	13.4
Underweight (5 per cent or more)	28	35.0	40	44.9
Changes in lungs in roentgenogram	15	18.7	19	21.3
Types of changes in lungs				
Calcified lymph nodes	8		13	
Bronchial thickening	5		4	
Fibrosis	1			
Infiltration	1			
Healed tuberculosis			2	

Data collected from the case histories of the patients with positive tuberculin tests are shown in Table II. It will be seen that only 8.8 per cent gave a history of known contact, whereas 19.5 per cent gave a family history of tuberculosis. Fifteen per cent of the patients were 5 per cent or more overweight and 40 per cent were underweight. The difference here is marked enough to make one attach more significance to the positive tuberculin reaction in the underweight than in the overweight child. Changes were visible in the roentgenogram of the chest in 20 per cent of the patients. The changes in the lung most

frequently found were calcified lymph nodes and bronchial thickening, neither of which necessarily indicates tuberculosis.

Family history of tuberculosis with no known tuberculous contact was shown in 124 cases of the 1000 examined. Of the 60 boys in the group of 124, 16 (26.6 per cent) gave positive reactions, and of the 64 girls, 17 (26.5 per cent) gave positive reactions. This seemed to indicate that among children with a family history of tuberculosis there is a slightly greater percentage of tuberculous infection than among children from families free from tuberculosis.

Thirty-three patients gave a history of tuberculous contact. Fifteen of these were boys, and of these 10 (66.6 per cent) gave positive reactions; 18 were girls and 9 (50 per cent) gave positive reactions. The high percentage of positive reactions occurring in children who had tuberculous contact, as compared with the percentage in children without tuberculous contact, has been commented on by all who have studied tuberculin reactions in the various groups.

In the 1000 cases there were 144 in which there was some evidence of pulmonary changes on roentgenologic examination of the chest. Seventy-five of these patients were boys and 16 (21.3 per cent) had given positive tuberculin reactions; 69 were girls and 20 (28.9 per cent) had given positive reactions. These figures suggest the possibility of a definite relation between positive roentgenologic findings and tuberculous infections in children.

In considering the accuracy of the results in this report there are several points which must not be overlooked. First, practically all the results reported are of the von Pirquet test which is applied by the burr method on the flexor surface of the forearm. The readings are taken 24 and 48 hours later. The Mantoux test, which has been shown to be much more significant for certain purposes, is used only in cases in which there is reason to suspect tuberculosis, and it is necessary to exclude a tuberculous infection as soon as possible. Second, the tests were made and read by different doctors and allowances must be made for individual variations in interpreting the results. Third, with few exceptions the results were reported after only one test. The importance of repeated tests in determining positive reactions is being emphasized more and more because there is a negative reaction following a first test in a certain percentage of noncachetic persons with known tuberculous infections, but the reaction is positive when the test is repeated.

In our records there are several cases in which the von Pirquet test was negative but because the physical examination or history suggested the possibility of a tuberculous infection the tuberculin test was later

TABLE III

COMPARISON OF POSITIVE REACTIONS IN VARIOUS SERIES

	Slater, per cent	Green and Forbes, per cent	Mayo Clinic, per cent
Entire group	10.0	45.2	17.0
With contact	81.0	64.0	58.8
Without contact	5.3	19.4	6.0

repeated by the Mantoux method. Sometimes a positive reaction was not obtained until a second Mantoux test was given or the amount of tuberculin was increased.

In conclusion, attention is drawn to the fact that our results are comparable to those of Slater, and of Green and Forbes who reported the results of tuberculin reactions in children in rural and semi-rural districts near Denver, the results being classified according to whether the children had or had not been in contact with tuberculosis (Table III).

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NEW UNION STATION, CHICAGO

The Importance of Proper Training for Sanitary Inspectors*

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THE Sanitary Inspectors Association of Canada has done a great deal to improve the status of the sanitary inspector—first, by affording opportunities for the members to increase their knowledge and usefulness, and second, by helping to remove that notion, once so prevalent that any uneducated Tom, Dick or Harry was good enough for a sanitary inspector.

However, in Canada we still have a long way to travel before the inspector comes into his own.

We have to convince quite a number of the sanitary inspectors themselves that in these days when public health work is progressing by leaps and bounds, and when new discoveries in the conquest of disease are being made almost every year, that a person taking up public health work in any of its branches cannot be content with mere routine work, but that he or she must be of a studious nature, prepared to keep abreast of this rapid progress—to know about the new discoveries, and to apply them in his daily work. We also need to convince quite a number of inspectors of the advantage of belonging to an association such as this, which exists for the benefit of sanitary inspectors and other health workers.

Next, we want the support of the health officers. We want to show them how much better work they will be able to accomplish when all public health workers are properly educated and trained.

We also need to convince governmental and municipal authorities who employ sanitary inspectors and other health workers that they can get better value for their money by insisting on proper qualifications for such workers.

Lastly, we seek to show the general public with whom we come in contact so much, that the sanitary inspector is not a raw man pitchforked into a public position by means of some "pull," but a man specially educated and trained for his particular work.

What is a sanitary inspector, and what are his duties? In the first place we note a great diversity in these duties. H. P. Boulnois, late

* Presidential Address to the Fourteenth Annual Convention of The Sanitary Inspectors Association of Canada, held at Toronto, Ont., Sept. 14-16, 1927.

Engineering Inspector of the Local Government Board, England, once had this to say on the matter:

In order to carry out the multifarious duties of his office, an inspector should be partially educated in the following trades and professions: That of a *plumber*, in order to detect bad work, and to be able to specify in his notices how the bad work is to be rectified. That of a *builder*, in order to detect improper sanitary construction, and state how it must be remedied. This is of greater importance where, as in some towns, the sanitary inspector has to carry out the duties of a building inspector, and watch the erection of new houses which are being erected under the by-laws regulating new buildings. That of a *butcher*, in order to detect and intercept bad meat. That of a *veterinary surgeon*, in order to observe animals that may be suffering under the Contagious Diseases (Animals) Act, and also in connection with his visits to slaughter-houses. That of a *lawyer*, in order that he may be well cognizant with all the Acts and Regulations under which he carries out his duties, and to enable him to form a judicial opinion upon all statements and facts. That of an *architect*, in order that he may understand plans, and if necessary, make sketches of anything that comes under his notice in connection with his duties. That of a *clergyman*, in order that he may preach the good tidings of sanitation, and may by his precept and example further the good work he is engaged upon, and also that he may be able to patiently bear the abuse which he may sometimes receive for what is called his "prying interference." Lastly, he must try and educate himself in *common sense*, that most valuable commodity, without which book learning availeth not much.

A few extracts from Taylor's *Sanitary Inspector's Handbook* may not be out of place here:

To carry out his duties efficiently, the sanitary inspector must exercise great forbearance, tact and good temper; sometimes technical objections will be raised to his proceedings, vexatious delay and evasions will often occur in the fulfilment of his notices, nuisances which the officer is anxious to suppress may elude his authority; when he would force one person to refrain from tainting the atmosphere with the result of an offensive trade, where he would oblige another to see that his tenants were better housed than cattle, he will often be reminded of the rights of property and of an Englishman's inviolable claim to do as he will with his own. With private affairs he should interfere only when they become of public import, and with private liberty only when it becomes a public encroachment.

Thus neither the personality nor the office should be magnified. To do this is to court the contempt of ordinary men and women. Officialdom is the curse of any administrative body. Therefore the man who goes about his duties in a way that compels respect, and whose tactful demeanour impresses others that the thing he is asking for cannot be denied, is the one who will win his way to the front. Owners and occupiers are but human, and they like to feel that they are receiving the attention of a friend, although an official.

And again speaking of qualifications:

Sanitary authorities do not and have not always sought to appoint the person best fitted for the post of inspector. They have too frequently appointed the man who could command the greatest influence with its members without the slightest regard to his qualifications. The important duties which sanitary inspectors are now called upon to discharge, and the large discretionary power that must be vested in them, demands that only qualified persons should receive these appoint-

ments, and experience has undoubtedly rendered it necessary to establish some mode of testing the competency and qualifications of persons offering themselves as candidates to fill such appointments. Some assurance should be given the public that the persons entrusted with these responsible duties are properly qualified.

The modern practice in large cities is to divide a health department into various bureaus or divisions, as for instance:

Communicable Diseases	Scavenging
Sanitation and Housing	Laboratory
Food Inspection	Vital Statistics
Dairy Inspection	Publicity, etc.
Child Welfare	

The tendency in cities where the work is thus divided is for the workers in each division to develop as specialists along certain lines. In rural districts however, and in smaller places where the work is not so highly specialized, the sanitary inspector is required to do work along many of the lines indicated above. It is both desirable and necessary for all inspectors, no matter what particular line is their specialty, to have a knowledge of all branches of health work, for they may find themselves in a position where such knowledge will be absolutely essential. The examining boards recognize this, and their syllabuses provide for the study of a great many subjects, and the questions set at the examinations cover the whole field of health work. This is as it should be. Workers in a narrow groove are apt to have narrow views, whereas a modern health department is a highly complex organization working along various lines, but with definite objects in view, *viz:* the conquest of disease, the prevention of sickness, the improvement of the happiness and efficiency of the human race, and the lengthening of the span of human life. It makes for the efficiency of any health department, therefore, when all the workers therein have a clear view of the main objectives, and each knows something of the work being done in other divisions than his own. This means that every officer must find time to read and thus keep himself well informed as to the rapid developments in theory and practice. A doctor who did not study and read the literature pertaining to his profession, would soon become a back number.

Consider a few of the subjects which are specified in our examination syllabus:

Water—its sources and methods of purification	Industrial hygiene
Building construction	Milk
Plumbing and drainage	Foods
Housing, both good and bad	Communicable diseases—their sources, modes of transmission, methods of prevention; disinfection
Sewage treatment and disposal	
Lighting	Child welfare work
Ventilation	Vital statistics
What constitutes a nuisance and how to abate it	Sanitary law
Offensive trades	

We must know something of all these subjects, and the more, the better. We should have a good knowledge of sanitary law, and what is more important, the scientific data on which our health laws are based, in order to be able, should occasion require it, to demonstrate to the public the reasonableness of any law with which we are asking them to comply.

In England or Scotland it has not been possible since 1877 to obtain an appointment as a sanitary inspector unless one is properly trained and certificated.

For food inspectors, smoke inspectors, health visitors and school nurses, maternity and child welfare nurses, additional certificates are required. The leading examining bodies have been The Royal Sanitary Institute, The Sanitary Inspectors' Association and The Incorporated Sanitary Association of Scotland. Quite recently the Royal Sanitary Institute and the Sanitary Inspectors' Association ceased to hold examinations for sanitary inspectors' certificates, and with the approval of the Ministry of Health a new examining body was set up entitled "The Royal Sanitary Institute and Sanitary Inspectors' Examinations Joint Board." The board consists of 30 members; 15 being nominated by the Ministry of Health, 10 by the Royal Sanitary Institute, 3 by the Society of Medical Officers of Health, and 2 by the Sanitary Inspectors' Association. The offices are at the Institute and the examinations will be conducted by the Institute. The certificate issued by the new board is now the officially recognized qualification in England and Wales for sanitary inspectors. In the Dominions the branches of the Royal Sanitary Institute will continue to hold examinations and to issue sanitary inspectors' certificates.

In Canada there are examining boards in Quebec (1901), Ontario (1914), Manitoba (1913), Saskatchewan (1916), Alberta (1917), British Columbia (1920). Some of these boards, however, do not present much appearance of activity. Manitoba seems about the only province where examinations have been held recently. This, however, is no doubt largely due to the fact that during and since the war, all municipalities have been exercising great economy, and appointments of new inspectors have been few. However, we are over the bad times now and must be prepared for expansion. If the examining board in your province is not functioning, find out why. Only recently a candidate from Regina had to come to Winnipeg for examination.

The Royal Sanitary Institute is willing to coöperate with the governments of the various provinces of Canada by erecting new examination boards with representatives appointed by these governments on the boards, and that the name of the government shall appear on

all certificates granted. I know that this offer has been made in Manitoba. It should be noted that the certificate of the Joint Examination Board in England will be harder to get than the old one, mainly because a much higher standard of preliminary education is required of the candidates. Some secondary education is also insisted upon. Candidates in addition to this must have attended a 6 months' course and also have received practical training in a public health department of lectures and demonstrations at an institute recognized by the board, for at least 300 working hours during a period of 1 year. The Ministry of Health is making arrangements with municipalities for the giving of this training.

This is a very brief description of the new regulations, but it indicates a movement toward a much higher standard for sanitary inspectors in England and Wales. New Zealand and Australia are moving in the same direction. What about Canada? Outside of the Province of Saskatchewan and the City of Winnipeg, I know of no place where the obtaining of a certificate is required as a precedent to appointment. Surely now that Canada ranks as a nation, we should not be satisfied with anything but the best. One of the main objects of our association is to promote the knowledge of sanitary science. How can we do this if we ourselves have not that knowledge?

One of the difficulties in this new country has been the lack of courses of lectures for sanitary inspectors, and of opportunity for gaining practical knowledge. The universities should provide the necessary classes. Practical training might be obtained by students in acting as voluntary part-time helpers in health departments. All, however, might not be able to get to the university centers, but in the larger cities private classes under a good tutor can accomplish much. This method has been very successful in Winnipeg. But even isolated students should not despair, for many students have prepared themselves for examination by private study. A course of lectures or a class held for students studying for examination, should be quite different from a short course of lectures intended for inspectors holding offiicial positions. In the first instance the student has to begin with the elements of the sciences, such as arithmetic, mensuration, geometry, physics, chemistry, etc., before commencing to consider the application of these to sanitation. The period of study must cover a fairly long interval. The short courses on the other hand are intended for practical men already knowing a good deal about the subjects dealt with, but anxious to acquire the latest and best information. Examples of the latter may be found in the lectures and demonstrations provided in England by the Royal Sanitary Institute, or by the courses in dairy inspection now

being given in England as arranged for by the Ministry of Health.

Our association stands for the enactment of legislation in all the provinces which will require, in the case of future appointments to the position of sanitary inspector, a qualifying certificate from some recognized national examining body.

We do not advocate this because we believe that a man who has succeeded in obtaining a diploma knows all about public health work. It takes years of practical experience to become really well qualified; but we do claim that men and women who have taken the trouble to obtain a certificate are likely to become valuable workers more quickly. Some health officers say that they prefer to train their own men, and no doubt a few health officers do good work along this line. Most of them, however, are too busy to attempt it. If I were a health officer and had to break in new men and train them to be useful, I should at least like them to know something of the sciences underlying the work, something of the triumphs of public health work in the past, and have an idea of the best methods now pursued in this and other countries.

I am rather amazed at the indifference of many health officers as to the qualifications of the men who are given them to work with. One would think, in view of the fact that considerable importance is today attached to the proper training of health officers, bacteriologists, public health nurses, and other health workers, that both the Canadian and American Public Health Associations would have adopted before now, some scheme to help the sanitary inspector also.

It should be clearly understood that what has been said about certificates being compulsory does not apply to sanitary inspectors already holding positions. By dint of study and hard practical experience many of these are the equal of any certificated men. We need them all within the fold of our association.

We want to raise the status of the whole profession, and the best, and in fact the only way to do this, is by means of education. We claim to be technical experts, and that we should receive remuneration on the scale of technical experts. This can only be accomplished by actually becoming technical experts and then by convincing health officers and employing authorities that we are entitled to better consideration as such. Get the technical ability and the remuneration will follow naturally. This education should be continuous. Systematic reading on subjects pertaining to public health work is an absolute necessity. There are available a large number of textbooks, reports and journals. We should have a conception of what is being done all over the world in public health work.

I said at the beginning that our first task was to convince the sani-

tary inspector himself of the importance of education and proper training, and of a continuous process throughout life of absorbing knowledge pertaining to his chosen profession and trust that what I have said may convince some of this necessity.

The next most important work of our association is to convince health officers of this necessity for trained men. Sanitary inspectors have not the slightest desire to usurp in any way the functions or prerogatives of health officers. On the contrary, our sole desire is to make ourselves as efficient as possible that we may become what we should be—the right hand of the health officer. In England the position of a sanitary inspector is different. There he is a statutory officer and may exercise certain powers, independently of the health officer. In Canada, however, the health officer is in supreme control, and personally I think ours is the better system, and tends to accomplish better work. What could a health officer accomplish without his assistants? Imagine a well qualified man—a D.P.H. if you like—being appointed as health officer of a large city and given no assistants. He would naturally say: "Where are my sanitary inspectors, my food and dairy inspectors, my communicable disease inspectors and nurses, my bacteriologist? I want these and I want good men and women, properly trained, if you expect me to do anything of value for the community."

And so, we appeal to the health officers for a more active support. We suggest that health officers might help along the following lines:

1. Demand that the public health workers appointed to assist them shall be properly qualified.

2. Assist in procuring such legislation in each province of Canada as will prevent the appointment in future of unqualified persons.

3. Assist in the training of the men and women composing their staffs, both by their own personal instruction, and by helping to secure the provision of lecture courses and demonstrations for sanitary inspectors.

4. In provinces where the Royal Sanitary Institute has at present no examining board, to assist in having such a board appointed. If a Canadian certificate is desired, arrange with the government of each province for a joint examination board composed of representatives appointed by the government, the Royal Sanitary Institute, and the Sanitary Inspectors' Association. In each province the examinations might be almost uniform, and the certificate issued to successful candidates might bear the name of the government of that province. This certificate should, however, be recognized officially throughout Canada as the certificate required by law for all future appointments after a given date. It might even be possible to arrange with the Dominion Government and the Royal Sanitary Institute for the establishment of an examination board for all Canada. Such a board would comprise five or more members for each province.

5. Give this association and the branches thereof their personal sympathy and support.

If we can induce health officers to do this, good results will follow.

If our chiefs, the health officers of Canada, see that we are in earnest in this matter, they can scarcely refuse to help in a matter which so closely touches them and their work.

The above remarks apply equally to mayors, aldermen, and those responsible for appointments to positions in health departments. This association is not a trades union, and does not exist *per se* for the purpose of raising salaries. But, if you are going to appoint men and women to help to carry on this great work, why not make sure that they know their job? If well qualified, they will be cheaper in the end.

The sanitary inspector and the public health nurse come into daily contact with more citizens than any other health officials. In the course of their daily work they are called upon to discuss health topics and measures. They should be well qualified to do this convincingly, and also be able to correct some of the inaccurate notions found among the public and obtain their coöperation.

Just a word here, lest anything I have said should convey the impression that there are no certificated inspectors in Canada—there are many, and most of them belong to our association. Six candidates obtained certificates in Manitoba in April, this year. If certificates become obligatory there will be no lack of applicants.

Dental Service for School Children

FREE dental treatment for children whose parents are unable to pay has recently been started in Habana, Cuba, and nearby towns by the Department of Public Health. Dental inspection of all public school children has been practiced for some time. During December more than 5,000 children had their teeth examined; 3,200 of them needed treatment; 915 were treated free.

Conveyances have just been provided in order to permit better service in the schools on the outskirts of the city.—*Diarie de la Marina,* Habana, Jan. 10, 1928.

What Is Public Health?

A Symposium

THE definition of public health is not a mere matter of wording. It is one of fundamental concept. The answer is not quite so simple as the constant use of the term would lead one to expect. There are several reasons for this. Two words are used in the term. The term is comparatively a recent one and not nearly so old as law, religion, medicine (and are these easy of definition?). There are so many activities embraced in public health that workers in these different fields may be expected to view the whole from their particular angle.

Recently a few members of the public health profession were asked to submit their definitions of public health in writing. Some forthwith began to make excuses. One state health commissioner admitted:

> Your letter asking for my definition of public health has driven me nearly crazy. I am sorry that I really can't do it now and anyway, nobody would care what my definition was. When the hot weather comes and I am thinking more freely, perhaps I can do something.

Others, while admitting the difficulties of such definitions, stood up under the strain. A few protested, but sent in their requested contribution. One contributor wrote:

> Definitions are dangerous things. I remember one on health, by a distinguished authority. It ran somewhat thus: "Health is a condition of the body which only exists when all the organs of the body are in a healthful state."

Still another protested:

> I am consistently opposed to definitions of any kind except of single words, since in definitions, we limit our field with meaningless generalities.

The foregoing extracts from the letters received will indicate that the task of defining public health is not an easy one. Yet it is important for us to define our field and to have a clear fundamental concept of it. The definitions which follow, though they show considerable differences, help toward these ends.

E. L. Bishop, M.D., Commissioner, State of Tennessee Department of Public Health:

> Public health practice is the organized effort of society to eliminate disease, elevate the standard of health and well-being and increase the span of life. Its scope of activity deals, not only with the causes and conditions of disease, but with the causes and conditions of health as well. In dealing with the causes and conditions of disease, activity must be essentially preventive in character, whereas in dealing with the causes and conditions of health activity must be productive of such causes and conditions.

H. W. Hill, M.D., University of British Columbia, Department of Nursing and Health, offers a self-contained statement which includes the implication that public health applies not only to individuals but to masses:

Public health is the science and art of conscious physical (including mental) adjustment between man and his surroundings in the universe. It is the science and art of human physical life within groups of people.

The Canadian Public Health Journal, in a publication soon to be issued, after the subsidiary terms hygiene and sanitation are first defined, the following definition will be used:

Public health is hygiene and sanitation applied to individuals, *en masse*, with special attention to the inter-relations of the individuals: it is the inclusive term under which may be placed all the science and art of our present civilization which bears in any way on the achievement of better adjustment between man and his environment.

H. S. Cumming, Surgeon General, U. S. Public Health Service:

Public health is a specialty of medicine whose function is to make applicable and to apply medical knowledge for the preservation and improvement of the health of populations.

Matthias Nicoll, Jr., M.D., Commissioner, State of New York Department of Health:

The field of public health comprises two chief functions: First, the administration and enforcement by health officials of the Public Health Law; and second, the promotion by coöperation between official and non-official health agencies—including the medical profession—of well conceived and practical measures directed toward the preservation of life and improvement of physical and mental health.

Curative medicine, in the commonly accepted meaning of the term, should not be included among official public health activities, except in emergencies and when, in the absence of proper medical care, there arises a menace to the health of the community.

George W. Fuller, Fuller and McClintock, Engineers, New York, N. Y.:

Public health is the health of the community considered as a whole, and its maintenance relates particularly to protection and promotion of the health of individuals and community groups through the systematic application of medical, biological, chemical and engineering sciences in establishing suitably favorable conditions for well-being and health.

Professor Ira V. Hiscock, Yale University, School of Medicine, Department of Public Health:

Public health is that which develops and conserves health and lengthens life by means of community activities organized to secure environmental sanitation, communicable disease control, early discovery and preventive treatment of disease, and the education of the public in the principles of healthful living.

J. L. Pomeroy, M.D., Health Officer, County of Los Angeles, Calif.:

Modern public health is the advancement of community health by the creation of an equal opportunity for every citizen to enjoy the fullest possible physical, mental and social development through the application of scientific knowledge in its

broadest sense to the environment of and to man himself, not as act of charity, but as a fulfilment of the obligations of democracy under our constitution.

W. S. Leathers, M.D., Vanderbilt University, School of Medicine, Department of Preventive Medicine, suggests that three points of view may be considered: (1) from the standpoint of the health of the public, (2) with reference to practice, and (3) as a science. He offers a definition of the term from the viewpoint of science and as a phase of medical service:

Public health is the application of the principles of preventive medicine to the control of disease and to the maintenance of individual and community health.

Sophie C. Nelson, R.N., Superintendent of Nurses, Visiting Nurse Service, John Hancock Mutual Life Insurance Company, Boston, Mass.

If the definition of public is "of or pertaining to the people" or "pertinent to or affecting a nation, state or community at large," and health is "a normal condition of body and mind," public health is the result of efforts for attaining and maintaining the maximum health of every individual through the joint endeavor of all.

S. J. Crumbine, M.D., General Director, American Child Health Association:

A recent writer has defined hygiene as follows: "Hygiene aims to make growth more perfect, life more vigorous, decay less rapid, death more remote."

Public health embraces a knowledge of those sciences, the application of which to human conditions and environment is designed to favorably influence the health status of the people of a community as a whole, and which, with applied personal hygiene, will provide the optimum conditions under which the aims of hygiene may be more certain of realization.

E. R. Hayhurst, M.D., Ohio State University, College of Medicine, Department of Public Health:

Public health is the philosophy, art and science of hygiene in its broadest sense as applied to groups of human beings, usually considered as within national, state, or other civic boundaries, and fostered by voluntary as well as official agencies. Hygiene implies the engendering of well-being, maintaining of the same, increasing its possibilities, preventing disease, and providing for the eugenic propagation of the race.

C.-E. A. Winslow, Dr. P.H., Yale University, School of Medicine, Department of Public Health:

Public health is the science and the art of preventing disease, prolonging life, and promoting physical health and efficiency through organized community efforts for the sanitation of the environment, the control of community infections, the education of the individual in principles of personal hygiene, the organization of medical and nursing service for the early diagnosis and preventive treatment of disease, and the development of the social machinery which will insure to every individual in the community a standard of living adequate for the maintenance of health.

SUMMARY

In general it is to be noted that the definitions deal with practices rather than principles. With one possible exception, the definitions do

not include any very direct reference to heredity as a factor in public health.

The similarities are greater than the differences in the definitions which have been listed. The order of the ideas, and the words used as sentence structure bridges between them vary as would be expected. But there is a remarkable uniformity in the ideas presented. What are some of the essential concepts which recur in these definitions?—

That public health deals with the causes and conditions of health as well as of disease.

That the object of public health is elevation of the standard of well-being, increase of the span of life, disease prevention, adjustment of man to his environment.

That these objects are achieved in the individual and in social groups.

That the factors involved in terms of knowledge are related to biology, chemistry, education, medicine, engineering, nursing and law.

That public health is made possible by individual and collective effort through offiicial and voluntary agencies.

That public health is both a science and an art.

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TENURE OF OFFICE IN THE HEALTH DEPARTMENT

IN his discussion in *Health Problems in Organized Society*,[1] Sir Arthur Newsholme makes the following statement:

Public health work must be made practicable as a career; and to this end reasonable security of tenure of office must be given to competent officers, and their remuneration must compare not unfavourably with the earnings of physicians in private practice. Happily both these objects are now approximately secured in England.

That they are objects still to be attained in this country every American sanitarian recognizes. Examples of the disturbance of the continuity of state and municipal health work by political interference are recent enough to keep the problem clearly in the foreground. The possibility of the recurrence of such incidents, disturbing alike to the state or city involved, and to general public health progress, is revealed in a recent survey made by the American Public Health Association's Committee on Permanency of Tenure.[2]

The insecurity of tenure of office among the health officers of 156 cities is revealed by the answers to five questions devised to throw light on the present American situation. Only 1 out of 5 health officers is appointed by a board of health. The health officer's appointment is regulated by civil service in less than one-fifth of these cities. Only 7 out of 10 cities require that the health officer shall devote his time exclusively to the duties of his position. About one-fourth of the cities appoint the health officer for a term of 2 years or less; less than half (46 per cent) make the term of office "indefinite, or at the pleasure of the appointing body."

Other municipal officials escape these hazards of the health officer's position. Almost all superintendents of schools in these cities are appropriately appointed by boards of education. They are on full-time service, as are the majority of city engineers and fire chiefs. The number of fire chiefs enjoying the privilege of an indefinite term of

office appreciably exceeds the number of health officers appointed on this basis. The average term served by the predecessors of fire chiefs in these cities was, consequently, twice as long as that of the predecessors of the health officers.

The second problem, that of adequate remuneration for the health officer, is equally far from solution. The average annual salary of the health officers in these cities was $4,420, yet the majority required that the health officer possess a medical degree. On the other hand, superintendents of schools, required in only 11 per cent of the cities to have a college degree, received an average annual salary approximately $3,000 higher. The implication is, of course, not that the latter salary is too high, but that the former is too low. The desideratum is remuneration commensurate with the professional requirements of the position, and this has certainly not been attained in the case of health officers.

In the present survey, only 3 cities made the degree of Doctor of Public Health compulsory for their health officers. Only 29 of the 1281 state, county and city health officers listed by the U. S. Public Health Service up to January 1, 1928, held the degree of Doctor of Public Health, or the Certificate in Public Health.

If the profession of health administrator, in city, county, or state, is made financially safe, more young men and women will seek special public health training in the universities, and the supply will satisfy the demand. That this aspect of the problem also demands attention is indicated by the report of the American Public Health Association's Committee on Training and Personnel,[3] which states that only 104 public health degrees were granted in 1926. Ferrell [4] has estimated that adequate health service for the entire population of the United States requires the training of 570 health officers annually. The inadequacy of the present output of potential health officers may be readily seen.

Like most of the problems of organized society, the dual health problem presented by the existing insecurity of tenure of office and low remuneration of health officers can be solved best by education. Intelligent citizens, convinced of the vital importance of health work to the community, will guard the position of health officer with the assurance of opportunity for uninterrupted efficient service with adequate compensation. But the educational method is necessarily a slow one. Meanwhile, there is at hand a specific means for hastening the education of the present generation of voters—the use of the *Appraisal Form*. A constantly increasing number of health officers is making this form the basis for a tangible record of progress, which is intelligible to the taxpayer. State-wide surveys in Michigan, Wisconsin, Illinois, and

individual cities—Detroit, Boston, East Orange, Racine—have made notable use of it.

The extension of the use of the *Appraisal Form* will make an immediate contribution to the general and individual solution of the health officer's dilemma.

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RHEUMATISM AND HEART DISEASE

THE importance of rheumatism as a disease of childhood with consequent damage to the heart, has often been pointed out. Apart from the ordinary acute cold, there is scarcely an ailment with which the average practitioner comes more frequently into contact. Possibly "familiarity breeds contempt." It is reasonably sure that the average physician does not consider the usual case of rheumatism as being serious. Parents and those generally who have to deal with children pay little attention to the ordinary rheumatic pains, and it is well known that the so-called "growing pains" are seldom given serious consideration, despite the warnings which have been issued.

Two years ago Drs. Barker and Cole [1] devoted to this subject a volume which deserved wide circulation, pointing out, as it did, that between 80 and 95 per cent of heart trouble in young people had its origin in some form of rheumatism. They quoted studies which indicated that there were at least 167,000 cases of rheumatic fever in the United States in 1916, of which 40 per cent almost certainly developed chronic and serious heart disease. During the World War 88,000 cases of valvular disease were found in 2,500,000 men examined in the draft. A recent compilation showed that in 1917 heart disease was given as the primary cause of death in 129,000 cases, and as contributory cause in 48,000; against 191,000 and 87,000 respectively in 1925; while diseases of the arteries were assigned as the primary cause in 19,000 in 1917, and 23,000 in 1925; against 40,000 and 66,000 respectively as contributory in 1925. While the population increased 38 per cent and deaths from all causes 14 per cent, heart disease showed an increase as a primary factor of 49 per cent and as secondary factor of 81 per cent, while arterial disease gave percentages of 21 and 64 respectively.[2] From the financial standpoint the cost of deaths from heart disease is estimated as more than $1,500,000,000 a year, and the cost of hospitalization as almost $30,000,000.[3]

Rheumatism has been the object of numerous studies in Great Britain, where the disease seems to be, if anything, more common than in this country. Reports have been issued by the Medical Research Council and the Ministry of Health in addition to two reports by a subcommittee of the British Medical Association.[4] The cost in money among the insured (approximately one-third of the total population) is some $85,000,000 annually, and if the late effects are taken into consideration, the disease ranks as one of the chief causes of death.

On May 10, a Conference on Rheumatic Diseases was held at Bath, England, the ultimate outcome of which will be awaited with great interest. Sir George Newman,[5] as President, gave a short but impressive review of the work before the conference, and a summary of the ideas which are widely held at the present time. That the disease, or diseases, which are usually classed under the name of rheumatism are not understood, and that there is good reason for differences of opinion, is demonstrated in a careful study of rheumatism among children in Cardiff.[6]

The conference was held in three sessions, which considered respectively the social aspects, causation, and treatment of the disease. Prevention seems to have been forgotten, though the paper by Dr. Reginald Miller [7] dealt largely with environment. No physiologist, no sanitarian, and no epidemiologist, were included in those invited to address the conference. The Public Health Service and the School Medical Service were also overlooked, which is hard to understand when Sir George Newman was the president.

As far as the published reports go, little or nothing new was brought forward. The meeting was for the purpose of collecting evidence, which must now be sifted and evaluated, with the hope that it will lead to research and the adoption of practical measures.

Dr. Miller held that environmental conditions, chiefly poverty and dampness, were the great predisposing factors in children. Changes in the skin make it inefficient in its responses to cold and moisture. Deficiency in vitamin B, with intolerance of carbohydrates, are noted in pre-rheumatic children. In certain forms of chronic rheumatism the endocrine organs are at fault.

Two great obstacles—not to mention others—have barred the way to proper understanding of rheumatism: confusion in nomenclature, and failure to establish the cause of the disease. The most notable work on causation, that of Payne and Poynton, has not been generally accepted nor carried to its legitimate conclusion. The work of Small in this country is not convincing. While we may claim some advance, we must in honesty confess that the entire matter is in a state of confu-

sion, though there is a general tendency to believe that some form of streptococcus is the causative organism. He is a bold or ignorant man who would speak dogmatically on the subject.

Some facts, however, stand out clearly. Rheumatism is very common. Its effects are disastrous to life as well as health. It is especially fatal in the poorer classes who cannot take proper precautions in the way of rest nor obtain skilled treatment. It involves a heavy tax financially on every community. It is possibly to some extent contagious. Certain studies show that the contact case incidence is approximately that of infantile paralysis and cerebrospinal fever, reporting of both of which is required.

There is certainly ground for believing that the disease is preventable to a large extent. From every aspect it challenges the bacteriologist, the epidemiologist, and the health officer. It deserves more study and more careful attention than has been given in the past.

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OF WHAT USE ARE OUR VOLUNTARY HEALTH AGENCIES?

DR. Oliver Wendell Holmes once said that when John and Thomas are talking together it is no wonder that confusion sometimes arises among the six of them. When asked for an explanation he said: "Why, there is the real John and John's idea of John, and Thomas's idea of John, and the real Thomas and Thomas's idea of Thomas, and John's idea of Thomas. That is six, isn't it?" There are three primary forces active in the public health movement, the health official, the unofficial health agency and the medical profession; and this, according to Dr. Holmes's computation, would make twelve possibilities for misunderstanding.

Yet it is of the most vital moment that these three active forces in the community health program should comprehend and sympathize with each other, for success involves the coöperation of all three. In the March issue of the JOURNAL the debt of the community to its health officials was discussed, and it seems time to consider what we owe to the volunteer health agencies which have played so large and so unique a part in health promotion in the United States. A little consid-

eration will indicate that there is scarcely a single stage in the public health movement in which these unofficial agencies have not played an important rôle. We prefer to call them "unofficial" rather than "voluntary" agencies because the latter term is sometimes held to imply a somewhat amateurish quality, an implication wholly unwarranted. In official and unofficial agencies alike, the paid executives are usually professional experts, quite as well qualified in one case as in the other; and in both instances the work is often directed by a voluntary unpaid board. The difference is simply that the health department is supported from the tax levy as a part of the routine machinery of government, while the unofficial agency is supported by contributions, endowments or community chest grants as an expression of the desire on the part of the citizens to further the fullest type of community life.

Let us review briefly some of our debts to the unofficial agency and see how nearly coextensive they are with the entire field of public health. The fundamental movement for environmental sanitation in the United States took its rise in the Citizens' Survey of New York City in 1865; and the latest campaign in communicable disease control for immunization by toxin-antitoxin is in large measure being conducted, in New York State and elsewhere, through the support of unofficial social agencies, following, of course, the general lines first laid down by Park and Zingher.

The anti-tuberculosis movement has from the start to the present time been dominated by the National Tuberculosis Association and other unofficial agencies, and at each important stage it is these agencies which have led, so that even today the bulk of our program for the control of this disease is carried on outside the health department. The movement for the control of infant mortality was initiated, both nationally and locally, by unofficial organizations. Even the health program for school children owes the stimulus which has transformed it in recent years to the vision of Dr. Holt and his associates in the Child Health Organization. The national programs for the control of venereal disease and for mental hygiene owe nearly all of the impetus behind them to the unofficial national organizations active in these respective fields. In industrial hygiene the individual far-sighted employer and the unofficial National Safety Council have accomplished far more than all the legislative and administrative machinery of the states. The development of public health nursing has (except on the Pacific Coast) been accomplished chiefly through unofficial agencies, and more than half of it is still conducted by such agencies. Finally, we can never express our debt to organizations such as the Metropolitan Life Insurance Company, the Milbank Fund and

the Commonwealth Fund for the health demonstrations at Framingham, Syracuse, Cattaraugus County, Fargo, Mansfield, etc., and for the stimulus and guidance they have given to our program as a whole.

The other two parties to the social contract for health promotion, the unofficial agency and the medical profession, must in the last analysis always recognize the ultimate authority of the health official. He, after all, represents the community as a whole and his word must be final. The best health officer is, however, the one who appreciates most gratefully the contribution which the unofficial agency and the medical profession can make to his program, and who uses them most generously and most intelligently for the common cause to which all three are pledged.

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Courtesy of Chicago Sanitary District

MAIN CHANNEL AT ROMEO, ILL., LOOKING UPSTREAM

CHICAGO'S PUBLIC WORKS SAFEGUARD ITS HEALTH

THE 57th Annual Meeting of the A. P. H. A. in Chicago, October 15 to 19, comes at a most opportune period in the development of great engineering projects of profound interest to public health workers. At no other time in the city's history has there been more activity in water supply, sewerage, garbage disposal and mosquito control than at the present. Chicago fully appreciates the truth of the slogan, "Health Is Wealth," and is investing in a most intensive way in health protection.

Before the projects for improvement in water supply and sewerage planned for this city are completed, about $400,000,000 will have been spent in these great public works. They are a part of Chicago's vast program for municipal improvements and are responsible in no small degree for the enviable public health record attained in that city during the past decade. Certainly every engineer and probably many of health officers and other health workers in the various branches of the profession will want to visit these works. With this in mind, the local committee in charge of arrangements is making special plans to accommodate all who attend the Annual Meeting.

The Sanitary District of Chicago charged with the great responsibility for drainage and sewage disposal in the region of Chicago is now building two of the largest sewage treatment plants in the world. One, the North Side plant, using the activated sludge process will be in operation at the time of the meeting; the other, the West Side Imhoff plant, will be nearly completed in its first unit and at a most interesting structural stage by that time.

The city water department has under construction a new pumping station—its 12th—a tunnel 200 feet under Lake Michigan, and a new intake crib structure said to be the largest ever built. During the last year the department placed in operation the world's largest water pumping station and the most completely equipped experimental water filtration plant ever operated. The new municipal garbage reduction plant, opened only a month ago, is considered one of the finest of its kind in America and has already attracted wide interest among engineers.

Under a plan developed by the Gorgas Memorial Institute mosquito abatement, work in the suburbs of Chicago has been carried out this year on a very

Courtesy of Chicago Sanitary District

ENTRANCE TO NORTH SHORE CHANNEL, SHOWING PUMPING STATION AT WILMETTE

comprehensive scale through the cooperation of several official agencies. The mosquito problem in this section is a unique one and has many interesting phases.

THE CHICAGO WATER WORKS

Chicago's water is obtained from Lake Michigan through 6 intakes located from 2 to 4 miles from shore. The water is brought to the 11 pumping stations through nearly 70 miles of tunnels under the lake and the city. The Thomas Jefferson Pumping Station, now under construction on the northwest side, will be the 12th pumping station supplying Chicago's water. It will have a capacity of 100 m.g.d. and like the more recent stations built by the city will be equipped with centrifugal pumps. The largest of Chicago's 12 pumping stations is the William Hale Thompson station, put

Courtesy of Chicago Sanitary District

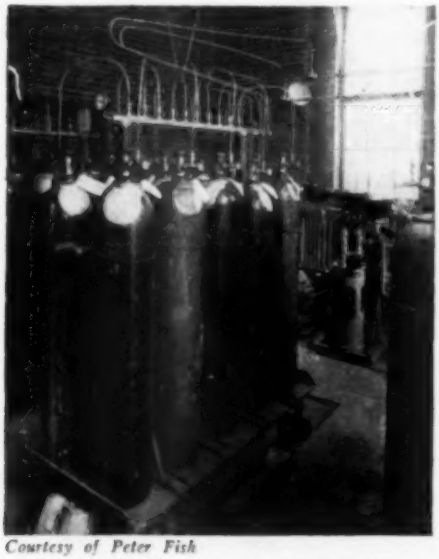
39TH STREET CONDUIT EXTENSION, UNDER CONSTRUCTION IN THE BED OF BUBBLY CREEK

Courtesy of Peter Fish

WILLIAM HALE THOMPSON PUMPING STATION

into operation for the first time last spring and having a capacity of over 300 m.g.d. The total pumpage capacity of all stations, including the Thomas Jefferson, is over 1,500 m.g.d. The average daily pumpage is about 900 m.g.d. Chicago pumps more water than any city in the world.

A new tunnel system known as the Chicago Avenue Tunnel is now under construction, approximately four miles of the tunnel having been dug already through solid rock, 200 feet below the lake. To serve this tunnel intake, a crib structure 90 feet in diameter has been built near the Municipal Pier. It will be launched, towed out to its location over the intake shaft in the lake, and sunk in its final position some time this fall.

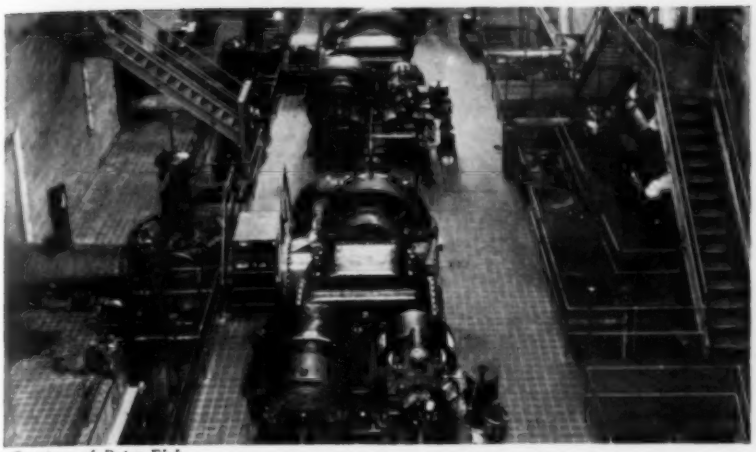


Courtesy of Peter Fish

CHLORINE BOOTH AT WILLIAM HALE THOMPSON PUMPING STATION

The newer tunnels are all dug through rock and are lined with concrete. They are mostly "horse shoe" in section with diameters varying from 12 to 16 feet. The older tunnels were dug through clay, and are brick lined. They are circular in section, diameters varying from 5 to 10 feet. The oldest, completed in 1867, is still in service. From the pumping stations the water is delivered to the nearly 3½ million consumers through over 3,500 miles of cast iron pipe. The per capita consumption of water in Chicago is excessive, averaging about 300 gallons per day. This is considered to be due largely to wastage by small consumers. Chicago meters only 35 per cent of its water, and this is to the large consumers such as industries and large apartment buildings.

The only treatment given the raw lake water for purification is chlorination at the pumping stations. The system for supervision and control over the



Courtesy of Peter Fish

PUMP ROOM AT WILLIAM HALE THOMPSON PUMPING STATION

chlorination of Chicago's water supply is exceptionally well organized. About 3500 pounds of chlorine are applied to the water daily. While this method provides a safe water, it does not give a first class supply. During and following storms on the lake the water becomes turbid for days and even weeks at a time, especially during the winter and spring months. In the summer and fall grassy, fishy tastes are noticeable in the water due to plankton forms in the lake water. The water in the vicinity of the southern cribs is exposed from time to time to pollution from the cities and industrial plants in the southern end of Lake Michigan in the so-called Calumet district of southern Illinois and northern Indiana.

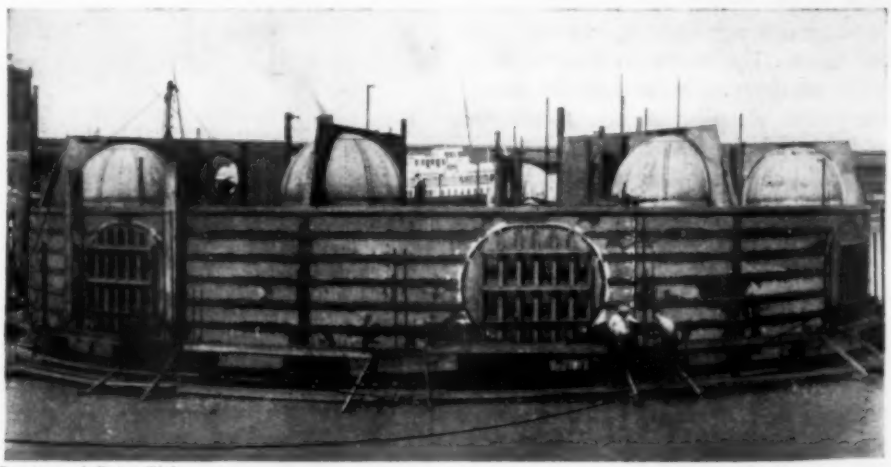
Realizing that a clean, sparkling and safe water supply at all times is not only a necessity but a public asset, Chicago is preparing for filtration of its water. The first step taken was the construction of an experimental plant. This station, which was completed this spring at a cost of about $150,000, is now operating and a most elaborate series of experiments on the treatment and filtration of Lake Michigan water is being conducted. The plant is in charge of experts and it is confidently believed by those who have seen the station and reviewed its program that findings of far reaching importance to water purification will result from the experimental work conducted there. The plant consists of two large size rapid sand filters with ten smaller filter units and various types of

Courtesy of Peter Fish

A SECTION OF THE CONCRETE LINED TUNNEL UNDER WESTERN AVENUE SHOWING JUNCTION WITH A SHAFT TO THE WILLIAM HALE THOMPSON PUMPING STATION

Courtesy of Peter Fish

CONSTRUCTION WORK IN NEW CHICAGO AVENUE TUNNEL THROUGH SOLID ROCK 200 FEET UNDER LAKE MICHIGAN



Courtesy of Peter Fish

LAUNCHING A NEW CRIB INTAKE FOR CHICAGO WATER WORKS. THIS STRUCTURE WILL BE FLOATED TO ITS LOCATION IN LAKE MICHIGAN AND BE SUNK OVER THE SHAFT TO THE TUNNEL 200 FEET BELOW THE BED OF THE LAKE. THE PLUGGED OPENINGS ARE THE WATER INTAKE PORTS. THE DOME-LIKE SECTIONS ARE THE AIR CHAMBERS TO BUOY THE STRUCTURE UP UNTIL SUNK IN ITS FINAL POSITION

Courtesy of Chicago Sanitary District

CALUMET-SAG CHANNEL

Courtesy of Chicago Sanitary District

CALUMET INTERCEPTING SEWER UNDER CONSTRUCTION

Courtesy of Chicago Sanitary District

CALUMET SEWAGE TREATMENT WORKS, IN OPERATION SINCE 1922

mixing and settling basins for pre-treatment of the water. It is a station which should be visited by every public health engineer and sanitarian.

The Chicago water works system to date has cost over $110,000,000 and when filtration plants to treat the entire supply are completed this investment will probably be over $150,000,000.

Courtesy of Chicago Aerial Survey Co.

NORTH SIDE TREATMENT PLANT. THIS PROJECT WHEN PLACED IN OPERATION WILL HANDLE THE SEWAGE FROM AN AREA OF 78 SQUARE MILES, AND A POPULATION OF 800,000.

THE SANITARY DISTRICT OF CHICAGO

The Sanitary District of Chicago is a municipal corporation, including not only the City of Chicago but 59 other municipalities within its corporate area of 442.35 square miles. Originally organized in 1889 for the purpose of diverting the sewage of Chicago from Lake Michigan and diluting it with lake water in amount at least 3⅓ cubic feet per second, sewage treatment has been added to its functions to supplement dilution. Under the present permit from the Secretary of War, a flow of 8,500 cubic feet per second is allowed from Lake Michigan in addition to the water supply.

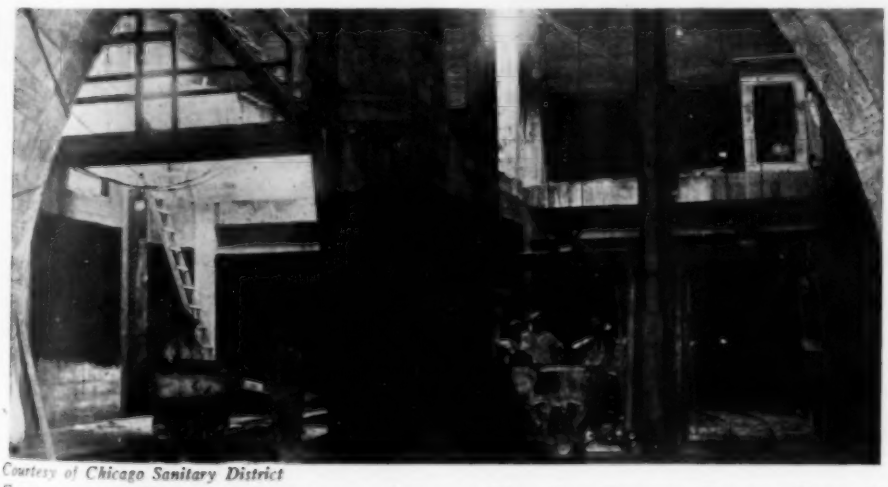
The original works of the District consisted of the main channel running from the South Branch of the Chicago River at Robey Street to Lockport on the Des Plaines River. This was opened for service in January, 1900. To this has been added the North Shore Channel, extending from Wilmette to the North Branch of the Chicago River, which it serves to flush out, and the Calumet-Sag Channel running from the Little Calumet River at Blue Island to the main channel at the Sag. Supplementing these channels as part of the dilution system are the intercepting sewers along the lake front both north and south of the Chicago River and the Calumet intercepting

Courtesy of Chicago Aerial Survey Co.

WEST SIDE TREATMENT PLANT. THIS PROJECT WILL SERVE AN AREA COMPRISING 100 SQUARE MILES AND IS DESIGNED FOR A POPULATION OF 1,850,000 WHICH IS EXPECTED TO BE REACHED ABOUT 1940

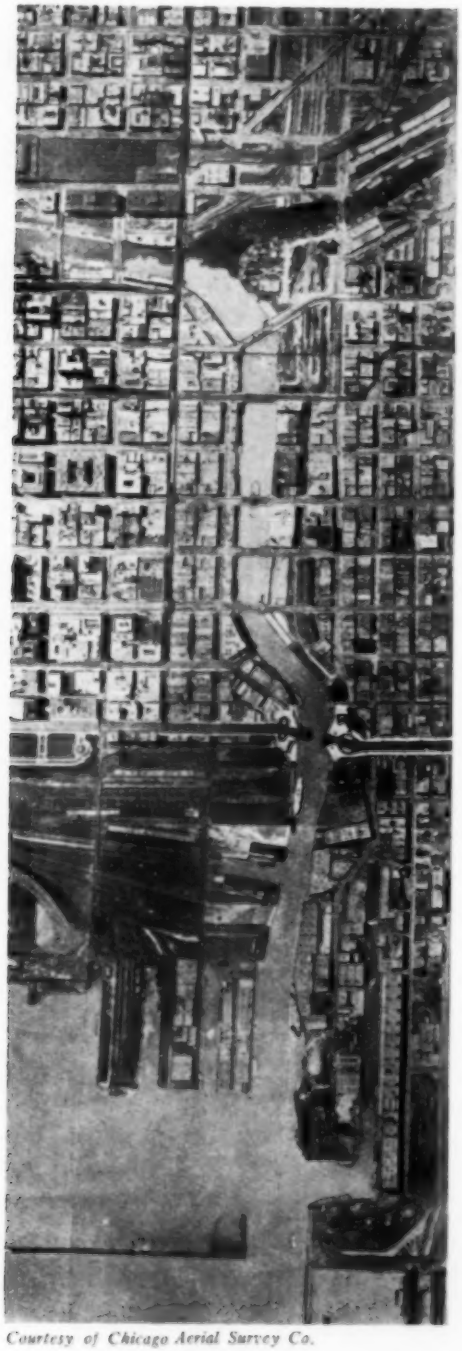
system. By this construction the sewage was diverted from the shores of Cook County, bordering on Lake Michigan from the county line on the north to the Calumet River on the south.

However, with the rapid growth of the city and its industries, the load on the channel grew to such an extent that by 1909, the Sanitary District realized that treatment supplementary to dilution was required. To learn how to do this to best advantage locally, a testing station was built and operated on domestic sewage and three others, packinghouse wastes, tanneries and the corn products waste, respectively, the three most im-



Courtesy of Chicago Sanitary District

CONNECTION OF WEST SIDE INTERCEPTING SEWER AT WEST SIDE PUMPING STATION. SEWER 17 FEET, 6 INCHES HORIZONTAL DIAMETER



Courtesy of Chicago Aerial Survey Co.

CHICAGO RIVER

(Note the line of demarkation between the polluted water from the North Branch and the fresh water from Lake Michigan.)

Courtesy of Chicago Sanitary District

PUMP AND BLOWER HOUSE, NORTH SIDE SEWAGE TREATMENT WORKS

Courtesy of Chicago Sanitary District

MAIN CHANNEL, ROCH SECTION

Courtesy of Chicago Sanitary District

CONSTRUCTION OF MAIN CHANNEL, ROCH SECTION

portant groups of industry, aggregating a few years ago an equivalent load of 1,500,000 population as against a human population of 3,000,000. Considerable progress has been made with the handling of the corn products waste by a system of bottling up and concentration of the waste.

Recently a paint waste has been studied because of its effect on biological treatment.

The treatment program comprehends the removal of settling solids from all the sewage as soon as possible, and ultimately biological treatment.

To develop the treatment system for the Sanitary District, a number of projects were outlined, the five major ones being: the North Side, the South Side, the Southwest Side, the Calumet and the DesPlaines River. In addition a number of minor projects for the smaller isolated villages have been planned, and three have been built, one at Morton Grove, one at Glenview, and one at Northbrook.

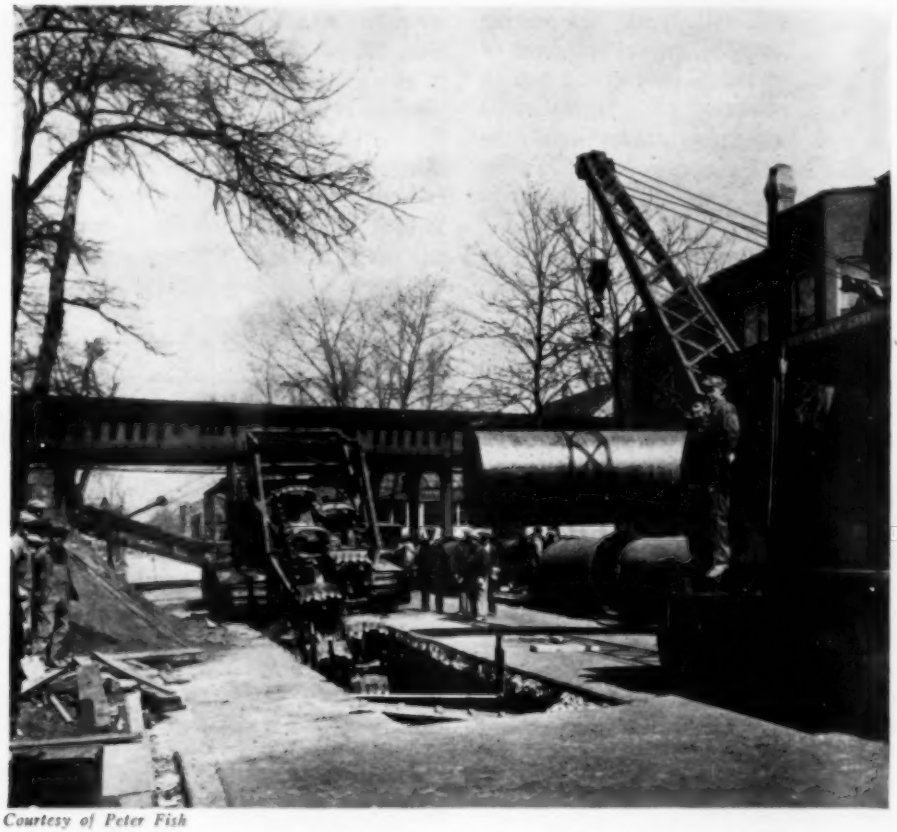
Of the major projects, the DesPlaines River works was put in service in 1922—an activated sludge plant, serving about 55,000 people, with provision for filter pressing and drying the sludge. At this plant various experimental features have been tried—a testing station is being operated on aeration prior to trickling filters, and a sludge digestion.

The Calumet works also went into service in 1922, and is now serving about 155,000 people. This is primarily an Imhoff tank plant, but for experimental purposes two of the thirty-two tank units have been equipped as activated sludge units. A small trickling filter of 0.7 acre is also operated for experimental purposes. Tests have been made on sludge filtering and heat drying. A mechanical stripper is being developed for handling the air dried sludge from the outdoor bed. A glass covered drying bed is also operated.

Of the large works two are under construction, the North Side and the West Side. The North Side works is expected to go into operation early in August, the West Side works in October.

The North Side works is an activated sludge plant, the largest in the world. It is designed to handle 330,000 people as of 1930, and an average flow of 175 million gallons daily. The plant includes the pump and blower house; the main building which houses the main meters, return pumps, excess sludge pumps, locker rooms for employes and laboratories; the grit chamber building; and the service building housing the heating boilers, machine shop, and miscellaneous shops. The sewage is pumped up 48 feet into the grit chambers, thence passing through 1-inch opening bar screens to preliminary settling tanks where the coarser solids are removed, then through the main meters to 3 batteries of aeration tanks. From the aeration tanks the sewage passes to the settling basins, the effluent going to the North Shore channel, and the sludge being returned to use over. The excess sludge is to be pumped through an 18-mile force main to the West Side works for digestion.

The West Side works is an Imhoff tank plant, the largest in the world, designed to serve 1,800,000 people as of 1940, and a flow of 400 million gallons per day. The first battery of 3 is now under construction consisting of 36 tank units. The sewage is pumped up 68 feet into the preliminary skimming tanks, about 15 per cent of the flow with the heavier solids being passed through the grit chamber. The flow then passes to the Imhoff tanks after receiving the sludge from the North Side. The effluent flows to the main channel. Sludge drying beds on a large scale will be provided, equipped for mechanical stripping and handling of the air dried sludge. A railroad is also planned to remove the sludge for dumping on some 900 acres reserved for the purpose.



Courtesy of Peter Fish

LAYING THE LARGEST CAST IRON PIPE IN CHICAGO'S WATER WORKS SYSTEM

The Southwest plant has not yet been planned.

To bring the sewage to the various works a comprehensive system of intercepting sewers has been planned. Of these the Calumet and the North Side sewers have been practically completed and the West Side sewer is under construction.

Up to December 31, 1927, approximately $126,204,310.31 has been expended on the dilution system, and in addition, $80,378,909.17 on the treatment program, of which a large portion has been spent since 1920. Last year about $16,371,208.09 was spent in construction of the treatment program. Ultimately some $155,000,000 will be invested in treatment.

The program now under way has been approved by the Chief of Engineers, U. S. Army, and the Secretary of War. To carry it out necessitated action by the Illinois State Legislature and increases in bonding and taxing power. At the present time sewage treatment is being extended on a practically unprecedented scale.

The various plants are open to visitors. Descriptive pamphlets are also available on the District works.

In addition to the sewage treatment works, a check is maintained by a fully equipped laboratory, on the water supplies taken from Lake Michigan, some 70-odd samples being analyzed daily. To follow the operation of the treatment works, branch laboratories are maintained at the Calumet and DesPlaines works.

In the study of the Illinois River conditions yearly branch laboratories are maintained at points between Summitt and Alton.

The accomplishment of the Sanitary District can best be measured by the marked reduction in typhoid fever in Chicago. Prior to the opening of the Main Channel in 1900, explosive epidemics had occurred with average yearly death rates as high as 174 per 100,000. Since the opening of the Channel the rate has steadily declined, until for the last 2 years a rate of under 1.0 has been attained.

In addition, the shores have been cleaned up, making bathing both safe and attractive where formerly it was frequently both unpleasant and dangerous because of the presence of raw sewage.

The condition of the Chicago River has been vastly improved. Flushing also aids in keeping the North Branch and the South Branch in better shape than prior to 1900. Sewage treatment will carry the improvement much farther.

Courtesy of Kaufmann & Fabry Co.

NORTH MICHIGAN AVENUE, CHICAGO—WRIGLEY TOWER, LEFT; TRIBUNE TOWER, RIGHT

ASSOCIATION NEWS

INTERNATIONAL MEMBERS

International membership in the A. P. H. A. is increasing. Within the last month applications for membership have been received from Dr. Hou-Ki-Hou, Commissioner of Health, Shanghai, China; Dr. Ianuarie Gomoiu, Health Commissioner, Ministry of Public Health of Rumania, Bucharest, Rumania; and Dr. Aurel Voina, Assistant Director of Public Health, Bucharest, Rumania.

A. P. H. A. membership extends into several countries of South America, into Austria, Belgium, Czechoslovakia, Spain, Denmark, France, Germany, Holland, England, Italy, Palestine, Poland, Switzerland, Portugal, China, Japan, Straits Settlements, Dutch East Indies, Syria, Borneo and Africa and Australia, Canada, Mexico and the Philippines. *The American Journal of Public Health and the Nation's Health* is posted to these countries monthly and it has subscribers also in Hungary, Jugo-Slavia, Norway, Russia, Turkey and Sweden.

COMMITTEE ON ADMINISTRATIVE PRACTICE

Professor Ira V. Hiscock of the School of Public Health, Yale University, is in Los Angeles County, Calif., making a survey of the health activities of Los Angeles County. Dr. W. F. Walker, Field Secretary of the Committee on Administrative Practice, has been on the west coast during June and July, stopping in Los Angeles to confer with Professor Hiscock relative to the appraisal of health activities being made in Los Angeles County; attending the Regional Meeting of the Association in Portland, Ore.; and making a reappraisal of health activities of Salem, Ore.

Dr. Walker gave a course of lectures, July 8-11 at Northwestern University on "Public Health Activities of a Chamber of Commerce." The syllabus of this series of lectures includes "Costs of Health Work," "Methods of Study of Local Conditions," "Fighting Disease," and "Prevention of Disease and Health Promotion." He also gave a series of lectures July 22-24 at Massachusetts Institute of Technology on the *Appraisal Form for City Health Work*.

DR. RUHLAND APPOINTED HEALTH OFFICER

George C. Ruhland, M.D., director of the health demonstration being conducted in Syracuse, N. Y., under auspices of the Milbank Memorial Fund, has been appointed full-time health officer of Syracuse, N. Y. The appointment was made by the mayor of the city upon the resignation of Dr. Herman Weiskotten, Dean of the Medical College, Syracuse University, who has been serving as health officer. The position carries a salary of $10,000 a year. Dr. Ruhland has been serving as deputy health officer of Syracuse, receiving $5,000 from the city and $5,000 from the Milbank Fund. The city of Syracuse will now assume the responsibility of his salary, and Dr. Ruhland's appointment goes into effect August 1.

Dr. Ruhland went to Syracuse as director of the health demonstration in 1924. The demonstration, according to the original plans of the Milbank Memorial Fund executives, was to cover a 5-year period, which has almost expired. But it was decided to continue the demonstration indefinitely if a full-time health officer was appointed.

Dr. Ruhland is a Fellow of the Asso-

ciation and is a member of the Committee on Administrative Practice, of the Sub-committee on the Revision of the Appraisal Form for City Health Work, chairman of the Sub-committee on Record Forms, and a member of the Sub-committee on Organized Care of the Sick.

Dr. Ruhland went to Syracuse from Milwaukee where he was commissioner of health.

CORRECTION AND APOLOGY

Listing the death of Dr. Jose Amarante, Rue Lafayette 106, Rio de Janeiro, Brazil, in the March JOURNAL was an error due to the return of mail by the Rio de Janeiro post office marked "Deceased."

STATE AND PROVINCIAL HEALTH AUTHORITIES

Matthias Nicoll, Jr., M.D., New York State Health Commissioner, was elected president of the State and Provincial Health Authorities of North America at Minneapolis, Minn., June 8-9. Dr. Nicoll is a Fellow of the A. P. H. A. and a member of the Governing Council.

NEW MEMBERS

Alice Ahern, R.N., Ottawa, Ont., Assistant Superintendent of Nursing, Metropolitan Life Insurance Company

Margaret J. Barrett, R.N., New Haven, Conn., Director Bureau of Nursing, Department of Health

J. F. Bradley, Valparaiso, Ind. In charge of water works laboratory

G. Donald Buckner, Dorchester, Mass., Agent of Board of Health

Ralph L. Byrnes, M.D., Los Angeles, Calif., Deputy Health Officer Los Angeles County

Martha A. Cekada, New York, N. Y., Nutrition Specialist

The Chlorine Institute, New York, N. Y., Sustaining Member

Nanna M. Colby, Panama City, Fla., Public Health Nurse, Bay County

Connecticut Public Health Association, New Britain, Conn., Affiliated Society

Cecil I. Corbin, D.V.M., New York, N. Y. (Assoc.)

Oscar A. Dahms, M.D., Chicago, Ill., Vital Statistician

William J. Ellis, M.A., Trenton, N. J., Commissioner State Department of Institution and Agencies

Jesse R. Gerstley, Chicago, Ill., Pediatrician

John W. Gibson, M.A., Victoria, B.C., Supervisor of Provincial Normal Schools (Assoc.)

Ianuarie Gomoiu, M.D., Bucharest, Roumania, Health Commissioner, Ministry of Public Health (Assoc.)

John D. Grant, M.D., Los Angeles, Calif., Deputy Health Officer Los Angeles County

H. J. Green, M.D., Maryville, Mo., Medical Advisor, State Teachers College

Faith Palmerlee Hadley, M.S., Ann Arbor, Mich., Research Assistant in Dental Pathology

Bertha E. Henderson, R.N., Jackson, Mo., School Nurse

Gloster P. Hevenor, C.E., Rochester, N. Y., Consulting Engineer

I. Chandra Sekhara Iya, M.B., Bangalore, South India, Student in Harvard Public Health School (Assoc.)

Laura F. Knowlton, Augusta, Me., Nursing Representative, American Red Cross (Assoc.)

Nicholas Kopeloff, Ph.D., Ward's Island, N. Y., Associate in Bacteriology, Psychiatry Institute

Morton W. Lieberman, B.E., East Orange, N. J., Sanitary Engineer

Dr. Mario Magalhais, Rio de Janeiro, Brazil, Medical Officer of the National Department of Health (Assoc.)

Samuel J. Mason, Perth Amboy, N. J., Water Superintendent

John D. McCarthy, M.D., New York, N. Y., Director of Health Education

G. Foard McGinnes, M.D., Richmond, Va., Director of Laboratories, State Department of Health

William R. Munson, Westport, Conn., Health Officer

J. J. Newell, Los Angeles, Conn., President Union Towel and Case Co., Inc. (Assoc.)

Elizabeth I. Parsons, D.Sc., Charleston, W. Va., Director State Hygienic Laboratory

Lawrence L. Patterson, M.D., Hanalei, Kauai, Hawaii, On health committee in the territorial legislature

Jesse A. Place, A.B., Kalamazoo, Mich., Stu-

dent in Public Health Work

Edith R. Powell, Miami, Fla., Bacteriologist in charge of Laboratory

Rosamond Praeger, B.A., Syracuse, N. Y., Supervisor of Child Welfare Nursing, Syracuse Health Demonstration

Kathryne M. Radebaugh, B.A., Minneapolis, Minn., Executive Secretary Hennepin County Tuberculosis Association

Agnes Renneke, Redondo, Calif., School Nurse

Annie L. Robertson, R.N., Tuscaloosa, Ala., County Health Nurse

Raymond J. Rosenberger, B.S., Asheville, N. C. (Assoc.)

Dr. Peter P. Shopoff, Stara, Zagora, Bulgaria, District Health Officer (Assoc.)

E. F. Smith, M.D., Georgetown, Del., Deputy State Health Officer, Sussex County

Seth H. Hurdle, M.D., Marshallton, Del., Health Officer

Richard C. Beckett, Dover, Del., State Sanitary Engineer

Ellis S. Tisdale, S.B., Charleston, W. Va., Chief Engineer, State Department of Health

Adele Wettlaufer, R.N., Fallon, Nev., County Public Health Nurse

Eleanor H. Whittinghill, M.S., Winston-Salem, N. C., Nutritionist with Health Department

Floyd P. Wilcox, D.V.M., Los Angeles, Calif., Director Division of Dairy Products, Los Angeles County Health Department

Mabel I. Wilcox, Lihue, Kauai, Hawaii, Field Supervisor of Public Health Nursing

Carl R. Williams, Los Angeles, Calif., Chief Quarantine Officer, Los Angeles County Health Department

Frank A. Wilmot, M.D., Alhambra, Calif., Deputy Health Officer, Los Angeles County

Percy B. Wiltberger, M.D., Columbus, O., Health Commissioner, Franklin County

Lois Witham, Sc.D., Foochow, China, Head of Department of Public Health and Welfare, Hwa Nan College (Assoc.)

Mark Zeifert, Stapleton, N. Y., Assistant Bacteriologist, U. S. Marine Hospital

DECEASED MEMBERS

R. A. Wilson, M.D., City Health Officer, El Paso, Tex. Elected 1927

Professor Charles I. Corp, 2114 Westlawn Ave., Madison, Wis. Elected 1924

L. M. Field, M.D., Beloit, Wis. Elected 1919

Arthur W. Bingham, M.D., 15 E. 76th St., New York, N. Y. Elected 1925

APPLICANTS FOR FELLOWSHIP

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PUBLIC HEALTH NURSING SECTION: Harriet Fulmer, R.N., Chicago, Ill.; Anne C. Munn, R.N., Middletown, O.

UNAFFILIATED: David T. Bowden, M.D., Oklahoma City, Okla.; James Wallace, M.D., New York, N. Y.

APPLYING FOR REINSTATEMENT: Harry J. Benz, M.D., Pittsburgh, Pa.; David C. Bowen, Trenton, N. J.

PUBLIC HEALTH ADMINISTRATION

HENRY F. VAUGHAN, D.P.H.

Diphtheria From Carriers—A study has been made in Baltimore of the prevalence of clinical diphtheria among family contacts who have been exposed to known carriers, virulent and avirulent. Statistically it has been shown that the family contacts of carriers are exposed, within the first month after discovery, to a risk of clinical diphtheria much greater than that of the control population living in the same neighborhood. The incidence among family contacts of carriers during this period, is, however, only about one-tenth that of those in similar association with recognized clinical cases. While questioning the adequacy of their statistical evidence the authors conclude that the family contacts of carriers of virulent bacilli experience a greater risk of having clinical diphtheria than do those associated with carriers of avirulent bacilli. The brief period of increased incidence in the families of carriers is followed by a compensatory period of at least 2 months' duration in which the attack rate falls below that of the control group.—James A. Doull, Wm. R. Stokes, & G. Foard McGinnes; The Incidence of Clinical Diphtheria Among Family Contacts Subsequent to the Discovery of Carriers:—*J. Prev. Med.*, II:191 (May), 1928.

Schick Tests in Honduras—A study has been made of the Schick test as applied to 430 natives of Honduras in 1926 and 1927, and 40 school children of American or American-Spanish parents, and 31 negro school children. The natives, as a whole, showed a very high percentage of immunes, while the American school children exhibited a much lower percentage of immunes. In a group of 34 American children from 6 to 14 years of age inclusive, 55.8 per cent were positive as compared with 9.6 per cent in the 196 children of the same age who were natives of Honduras. The author feels that congested living conditions have much to do with the difference in susceptibility, and that cities usually show a lower percentage of susceptibility than do rural communities.—William H. Taliaferro, The Results of Schick Tests in Tela, Honduras, *J. Prev. Med.*, 2:213 (May), 1928.

Scarlet Fever Immunization—Since July, 1924, in Gary, Ind., an effort has been made to immunize school children against scarlet fever. The general procedure has been to give a Dick test followed by 5 doses of toxin given at intervals of 5 to 7 days, and Dick tests given 2 weeks after the last dose. The dosage has been increased until 500, 2000, 8000, 25,000, and 80,000 have been given since September, 1927.

Fifty-three per cent of 6452 primary Dick tests have been positive. In general, younger children show a higher incidence of positive tests, and more of the American than of the foreign born children show positive reactions.

Three thousand, two hundred and fifty-five Dick re-tests have been given. Sixty-six per cent were negative, 17 per cent slightly positive, and 17 per cent positive. Of a small group that were Dick negative in May, 1927, after a full course of doses, about 70 per cent were still Dick negative in December, 1927.

Of the 433 cases of scarlet fever reported to the Gary Board of Health since July, 1924, 12 were in persons known to be Dick positive, and 6 in persons who had been pronounced Dick negative.

The authors conclude that the incidence of scarlet fever and the number of

deaths have decreased, and especially has the reduced incidence been affected among those who have had scarlet fever toxin.—Margaret G. Smythe and O. B. Nexbit, The Dick Test and Immunization Against Scarlet Fever in the Public Schools of Gary, Indiana; *J. Prev. Med.*, 2:243 (May), 1928.

Health Conditions in Bronx—The Bronx Borough of the City of New York has a large excess population between the ages of 20 and 45 years when compared with the standard United States distribution. The excess is 56,000 in this group, indicating for the men 13 per cent and for the women 19 per cent more than elsewhere.

The natural rate of increase of population in Bronx is the highest of any borough, due to a high birth rate as well as a low death rate. In 1926 the Bronx rate of natural increase was 11.90 per 1,000 annually, against 3.85 in Manhattan.

In 1926 the crude death rate was 10.52 per 1,000 and was thus 17 per cent more favorable than that of New York City in general.—G. J. Drolet; Health Conditions in the Bronx, New York City; New York Tuberculosis and Health Association, March, 1928.

Fargo Demonstration—Two parts of the final report of the Fargo Demonstration which has been carried on since 1923 through the coöperation of the Commonwealth Fund with the City of Fargo have appeared. At the beginning of the demonstration at Fargo the score, as indicated by the *Appraisal Form*, was 320 as compared with 499 as an average score of 86 small cities in 1923. In 1927 the Fargo score had risen to 827 points.

During the year 1927 the Child Health Demonstration Committee of the Commonwealth Fund has gradually withdrawn from the activities which they had organized, leaving local personnel in the full direction of the program. The public health staff of the city paid from local funds consisted at the end of 1927, in a full-time health officer, sanitary inspector, 6 nurses, supervisor of health education, a part-time physician, a full-time dentist, and 2 clerks. The community health program for the fiscal year ending June 30, 1928, calls for the expenditure of $1.51 per capita. The health department share of this is $1.06, of which only $0.38 goes to the isolation hospital. The board of education contributes $0.41 per capita.

Dr. Walker states in his summary report that "bringing its health work up to its present high level in the space of 5 years is an achievement of which Fargo may well be proud." He further emphasizes certain definite needs as, an increase in immunization against diphtheria and smallpox; a more adequate follow-up of cases of communicable disease; a more intensive program for the early recognition and care of tuberculosis cases and contacts; a more adequate financing of dental service; an increased supervision of milk and food supplies; and provision for continued progress in community health education. —Five Years in Fargo—Part 1 and Part 2—The Commonwealth Fund Division of Publications, *Bulletins No. 7* and *8*, May, 1928.

LABORATORY

C. C. YOUNG

ANTIGENIC PROPERTIES OF BACILLUS TYPHOSUS FROM A SMALL EPIDEMIC

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THE following report is made because of the interest which attaches to the occurrence of typhoid fever in a recently vaccinated individual and because a study of the infecting organisms and other organisms isolated from the same epidemic showed them to be identical with each other but different from the strain used for vaccination. The patient, O. S. aged 45, received three doses of a standard commercial typhoid vaccine on December 4, 11, and 18, 1925. This vaccine is prepared from the Rawlings strain of *B. typhosus* and strains of *B. para-typhosus A* and *B*, obtained from a reputable source. No appreciable reaction resulted from the vaccination. On August 10, 1926, the patient became ill. He had a temperature of 102°, diarrhea, headache and general malaise. On August 14, a blood count showed a total white count of 6,600; polymorphonuclear cells, 66 per cent; large lymphocytes, 4 per cent; small lymphocytes, 30 per cent. A stool culture was made and typhoid and paratyphoid bacilli were isolated. The typhoid organisms were found to be typical culturally but agglutinated slowly and in low dilutions only with antityphoid serum prepared from the Rawlings strain. The paratyphoid bacillus resembled *B. paratyphosus B* in its cultural reactions. The patient ran a typical typhoid course of rather mild type. The temperature was seldom above 102°. There was no delirium. On August 25, he developed phlebitis of the popliteal vein. He was discharged from the hospital October 3, 7 weeks and 5 days from the onset of illness. Stool cultures made for release on October 8 showed typhoid bacilli but in relatively small numbers. Cultures made on October 10 and October 16, showed no typhoid bacilli. Several subsequent examinations showed that the stools continued negative. Although the typhoid bacillus was not isolated from the blood stream, the typical clinical course and the epidemiological history as given below precluded the idea that the patient was a typhoid carrier and that the organisms found in the stools were not the etiological factor.

At about this same time 7 other cases of typhoid fever were reported and an investigation showed that they occurred on the same dairy route. These cases had been preceded by a fatal case about 2 weeks before where the patient also took milk from this dairy. The source of infection was traced by the State Board of Health to a carrier who had recently come to the dairy. The patient, O. S., took milk from this dairy and was a heavy milk drinker, so that it seemed probable that the source of his infection was the same as that of the other cases in the epidemic.

In view of the fact that the strain of typhoid isolated from O. S. was somewhat unusual in its serological reactions it seemed worth while to investigate the antigenic properties of as many

other strains as could be isolated from this same epidemic. From the 9 cases which occurred, 6 strains were isolated from the following sources: C, blood; M, blood; S, urine; O. S., stool; N, stool; C., stool. All of these cases had typical clinical cases of typhoid fever. Unfortunately, the strain isolated from the carrier could not be obtained. Accordingly a study was made of the cultural and antigenic reactions of these strains to try to ascertain if they were identical as might be expected from their common source, and also if they differed in any respect from the Rawlings strain which had been used for vaccination in the case reported. Culturally these 6 strains were typical for *B. typhosus* and differed only from the Rawlings strain in that they fermented xylose more rapidly. In order to ascertain the antigenic properties of the epidemic strains, agglutination and absorption tests were used.

Antisera were prepared from each of the 6 strains and from the Rawlings strain. Cross agglutination tests showed that the strains from the epidemic agglutinated to titer with the antiserum prepared from these strains but that they agglutinated slowly and in low dilution only with the anti-Rawlings serum. The anti-Rawlings serum agglutinated the Rawlings strain at dilutions of 1-5000 and the milk strains at from 1-500 to 1-1000 only. Absorption tests were made by absorbing each antiserum with all the milk strains and with Rawlings. These tests showed that the epidemic strains absorbed out all the agglutinins for each other and for the Rawlings strain but that when they were used to absorb anti-Rawlings serum they failed to remove the agglutinins for the Rawlings strain. Absorption of the sera prepared from the epidemic strains with the Rawlings strain weakened the titer for the milk strains but did not remove all the agglutinins for the homologous strains.

Agglutination and absorption tests with serum from O. S. after recovery showed that his serum agglutinated all the epidemic strains in dilutions of 1-500 but that it agglutinated the Rawlings strain only partially at a dilution of 1-10. The O. S. organisms used for absorption with O. S. serum removed all the agglutinins for the milk strains while absorption of O. S. serum by the other milk strains removed the agglutinins for the O. S. strain. Use of the Rawlings strain for absorption with O. S. serum removed the agglutinins for the O. S. strain and the other epidemic strains only in high dilutions of the serum. In view of the foregoing agglutination and absorption tests it seems fair to conclude that the strains of typhoid isolated from the milk-borne cases were identical with each other and probably identical with the strain isolated from the carrier at the dairy. The tests also show that the epidemic strains differed from the Rawlings strain used for vaccination in the case reported.

Although the success of antityphoid inoculation is unquestioned an inquiry into the literature reveals a number of cases of typhoid fever occurring in vaccinated individuals. We have been able to find a record of 340 cases of typhoid fever in vaccinated persons occurring since 1915, with some records of epidemics where figures are not given.[1-11] These were all well established cases of typhoid in which the individuals had been vaccinated by the subcutaneous method with one strain of typhoid or with typhoid, paratyphoid A and paratyphoid B. Many cases were reported from the French, British and German armies during the early part of the World War, but as vaccination then did not include the paratyphoid bacilli and as careful bacteriological examination was not always made, many of the so-called typhoid cases may have been paratyphoid infections. Such cases were not included in the above number.

Vaughan [1] sums up what seems to be the consensus of opinion as to the causes of typhoid fever in vaccinated individuals as follows:

1. Overwhelming infection
2. Strains of organisms against which the ordinary vaccine does not immunize
3. Failure of patient to react
4. Failure of inoculation

In our opinion two of these factors may have been operative in this case. The patient probably received a very heavy dose as he was accustomed to drink large quantities of milk and the antigenic differences which distinguished this organism from the Rawlings strain may have been sufficient so that the antibodies developed as a result of vaccination did not protect against the epidemic strain. It is not known whether the patient reacted after vaccination with the formation of antibodies against the Rawlings strain. His serum gave a partial agglutination at 1-10 with the Rawlings strain after he was convalescent. The antigenic variation from the Rawlings strain which the epidemic strains exhibited confirms the observation previously made by one of us.[13] A number of other authors also have observed antigenic variations in well identified strains of *B. typhosus*. Blankenhorn,[12] Ecker,[14] and Myers [15] have observed antigenic differences in strains residing in the tissues of the host for long periods of time and in carriers. The work on these epidemic strains suggests that we were dealing with such a strain which may have become atypical from long residence in the carrier. Olin [15] and others have considered cross absorption tests as evidence of the identity of strains isolated from epidemic cases arising from a common source.

SUMMARY

The case of typhoid fever reported here shows the occurrence of infection in a recently vaccinated individual. The strain recovered from the patient was found to be antigenically identical with 5 other strains from cases which received their infection from a common source, i.e., contaminated milk. These strains differed antigenically from the Rawlings strain used in the vaccine.

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VITAL STATISTICS

LOUIS I. DUBLIN, PH.D.

The Homicide Record in American Cities, 1927—Deaths from homicide seem to have reached a stationary condition at one of the highest points in our history. During 1927 the rate in 122 American cities, having an aggregate population of about 35,000,000, was 10.4 per 100,000, which is slightly lower than the 1926 rate of 10.8. In 30 cities for which data can be secured as far back as 1900, the rate has increased steadily with few fluctuations from 5.1 in 1900 to 11.3 in 1924; since then, however, it has dropped to 10.1 in 1927.

There were no deaths in 1927 from homicide in Brockton, Malden, Newton and Somerville, Mass., Harrisburg, Pa., Lakewood, O., Lincoln, Neb., Newport, R. I., and Passaic, N. J. Low death rates of 1.0 or less were found in Camden and Elizabeth, N. J., and Lowell, Lynn and New Bedford, Mass. The highest murder rates were 69.3 in Memphis, Tenn., 63.0 in Birmingham, Ala., 55.5 in Charlotte, N. C., 54.0 in Jacksonville, Fla., 43.4 in Atlanta, Ga., 40.0 in Miami, Fla., and 39.7 in East St. Louis, Ill. The largest cities of the country with their congested slums and alleged rule of violence and crime had rates which were considerably lower than these southern cities. Boston had the lowest rate, 3.9, New York City 6.1, Philadelphia 8.4, Baltimore 10.3 and Chicago 13.3. Conditions in Chicago seem to be improving, however, for the 1926 rate was 16.7. An improvement is also apparent in Detroit, Mich., where the rate dropped from 25.3 in 1926 to 18.7 in 1927.

The mortality from homicide in American cities does not compare at all favorably with the rates of foreign countries. In 1926 the rate for England and Wales was 7 per million as against 104 for the American cities. The rate for Italy in 1925 was 44 per million and the corresponding rate for the United States Registration Area was 86. In the same year the Canadian Registration Area, which included all of Canada except the Province of Quebec, had a rate of 14 per million.

An analysis of the homicides of Jefferson County, Ala., was made for the years 1920-1926. During this time there were 560 deaths of males and 137 of females from homicide. The average age at death of the females was 25.8, for the males it was 31.9 years. Six hundred and eighty-nine of these deaths took place in Birmingham city but 19.1 per cent of the males and 15.0 per cent of the females were non-residents of the city. Seventy-five and seven-tenths per cent of the male deaths and 59.7 per cent of the female deaths were due to firearms while 66.2 per cent of the white persons and 74.4 per cent of the colored were killed in this manner.

The death penalty is enforced in much too small a proportion of cases and with too long a delay to be effective in preventing homicides. A study of the 10-year period ending with 1926, in 6 states that did not enforce the death penalty and in 5 that did, showed the average murder rate in the non-capital-punishment states to be 42 per million and 57 in the states which enforced the penalty. The number of deaths from homicide for each execution varied from about 36 in Pennsylvania and 44 in New York, to 170 in Ohio and 274 in Massachusetts. These statistics prove that the infliction of the death penalty falls on an insig-

nificant fraction of the murderers in these states and that therefore the best purposes of justice would be served by abolishing the death penalty and substituting life imprisonment without opportunity of pardon or commutation of sentence.—Frederick L. Hoffman. *Spectator* 120:8 and 40-42 (Mar. 29), 1928.

London **Vital Statistics, 1927**—The statistical abstract published by the London County Council shows that the estimated population of the administrative county of London in 1927 was 4,550,000. That recorded in the last three censuses was 4,536,257 in 1901; 4,521,685 in 1911, and 4,484,523 in 1921. Greater London has increased in population from 6,581,402 in 1901 to 7,805,870 in 1921. The average birth and death rates per 1,000 population of the decennium 1841-1850 were 31.6 and 24.8, respectively, and the natural increase rate was therefore 6.8. In the quinquennium 1921-1925 the birth and death rates were 19.9 and 12.3, respectively, and the natural increase rate 7.6. The most striking fact is the fall in infant mortality from an average of 167 in the decennium 1841-1850 to an average of 71 in the quinquennium 1921-1925. The rate recorded in 1927 was still lower, 59. From 19,586 in 1917 the number of street accidents increased to 48,153 in 1926. The 1927 figures are not yet published, but it is feared that this ominous increase has been maintained. Accidents per 1,000 of population have risen from 2.61 to 6.71.—London's Moving Populace and Vital Statistics. *J. A. M. A.* 90:1489 (May 5), 1928.

Health of Pretoria, Union of South Africa—In the year ended June, 1927, the European population was 42,000 and there were 23,000 colored persons —Africans, Eur-Africans, and Asiatics. The European death rate was 7.0 per 1,000, as compared with 7.7 in the previous year. The death rate for the colored races was 16.0 per 1,000. The European infantile mortality rate of 49 per 1,000 births is the lowest on record for Pretoria; last year's figure, which is considered to be very low, was 2.5 higher. The infant mortality for all colored races was 315 per 1,000 registered births. The natives (Bantus or Kaffirs) suffered most heavily, their rate being 388.5 per 1,000, though this figure is an improvement on that of the previous year, which was 483 per 1,000. In Benoni the rate is quoted as 847 per 1,000, the number of deaths in native infants under 1 year in January, 1927, being equal to the number of births during the month. On the West Rand conditions, though bad, are better than on the eastern end of the Reef; in Krugersdorp last year the native infantile mortality rate was 320 per 1,000 births, but these figures undoubtedly exaggerate the state of affairs. Notification of native deaths is practically complete, but that of births is very defective.

Excluding imported cases the infectious diseases notified among Europeans were: typhoid 67 with 2 deaths, scarlet fever 25, diphtheria 20, measles 209, whooping cough 100, other infections 33; among non-Europeans: typhoid 26 with 8 deaths, diphtheria 2, measles 17, whooping cough 8, tuberculosis 13, other infections 8. Typhoid vaccine was administered to 1,497 persons—545 Europeans and 952 non-Europeans. Only 12 cases of malaria were notified in the municipality during the year; 8 of the patients had either come to Pretoria from elsewhere or had been infected outside the area.—*Brit. M. J.* Mar. 3, 1928, p. 370.

Health Conditions in Prussia During the Year 1927—Health conditions in Prussia, during 1927 were comparatively favorable. There were only two outbreaks of typhoid of any propor-

tions. The first outbreak, which was traceable to infected cheese, comprised 175 cases and 12 deaths. The second outbreak, which spread over seventeen towns and villages through contact transmission from patient to patient, included 155 cases and resulted in 14 deaths. As in recent years, there were frequent outbreaks of meat poisoning involving a considerable number of cases.

During the post-war period, diphtheria and scarlet fever were on the decline, but, during the past 2 years, they have increased. In 1927, the increase of both diseases was marked, while the number of scarlet fever cases, over 1926, was almost doubled. In the main, however, the diseases have run a mild course, so that the deaths have not increased in the same proportion as the morbidity. In Berlin and in some few cities to which the disease was carried, diphtheria appeared in a malignant form, and caused a case mortality of 12 per cent. In some parts of Prussia, especially in the sections of the province of Saxony that border on the Free State of Saxony, epidemic infantile paralysis was prevalent, evidently carried there from the focus of infection in Leipzig and vicinity. The number of cases and deaths was, however, considerably less than in 1926.

Puerperal fever still shows a comparatively high morbidity and mortality. Tuberculosis, which, during the post-war years, showed an increased incidence, appears to have been brought to a standstill; the number of deaths from tuberculosis has decreased. For a number of years, an increasing incidence of goiter has been observed in Prussia, particularly among the school children. In many sections of Prussia small quantities of iodine have been administered in an artificial manner, with undeniably good results, though it is too early to draw any final conclusions from these experiments. The observations will be continued, with great interest and attention.—*J. A. M. A.* 90:1726 (May 26), 1928.

The Age Incidence of Appendicitis Operations—A study of 766 consecutive appendicitis operations in the past 20 years at the Claremont (N. H.) Hospital showed that 41 per cent were in persons between 20 and 30 years of age, 21 per cent were in the 10-20 age group, 20 per cent in the 30-40 group, 7 per cent in the 40-50 group, 5.5 per cent were under 10 and 5 per cent over 50 years. The 20-30 age group also showed the highest incidence, about 32 per cent, in 6,568 cases reported by questionnaire from different parts of Canada and the United States. Four hospitals in New England, however, had the most cases, 38 per cent, in the ages between 10 and 20.

Of the 37 cases at the Claremont Hospital occurring in persons over 50 years of age, 22 were in such desperate condition that the operation was performed as an attempt to save the life of the patient. All of these 22 cases had suppuration in some form; some gangrene, some a large amount of free pus and some a well developed peritonitis. Twenty-four of these 37 cases were male and 13 female.

The mortality rates at the Claremont Hospital were as follows: all ages, 3.6 per cent; under 10 years 4.8 per cent; 10-20 years 2.3 per cent; 20-30 years 2.2 per cent; 30-40 years 2.0 per cent; 40-50 years 4.1 per cent; 50 and over, 21.6 per cent. The mortality rates reported in the questionnaires varied from 1.9 to 4 per cent for all ages and from 19 to 50 per cent in all persons over 50. —Emery M. Fitch, Appendicitis in People Over Fifty Years of Age. *New England J. Med.* 198:348-351 (Apr. 5), 1928.

PUBLIC HEALTH ENGINEERING

ARTHUR P. MILLER, C. E.

Methods Used by Oil Company Stop Pollution of Streams—At the El Segundo Refinery, the Standard Oil Company of California pumps about 20 million gallons of salt water daily from the ocean. The water is used for cooling purposes in the refining of oil. In its way through the refinery the water picks up a certain amount of oil from leaks and spills, etc. The oil is about 0.1 per cent of the volume of water used. This oil is removed from the water before latter is returned to the ocean. The article describes the method used in separating the oil and water by passing it through a tank or series of tanks or compartments and over skimming baffles. The action which takes place keeps the water and oil moving toward the surface, thus assisting and accelerating the movement of the oil to the surface where it is pumped off. The above plant removes all traces of oil from the water. Charles W. Geiger. *Water Works Eng.*, 81:90 (Jan. 18), 1928. Abstr. Frank Raab.

Deep-Pit Sludge Digestion at Indianapolis Sewage Works—Sludge is pumped at 7.72 and 1.12 per cent solids, respectively, to digestion pits. Pits are about 300 ft. square with a depth of 7 to 10 ft. The nature of the soil beneath the pits permits water to escape to such extent that it is only occasionally necessary to remove any quantity of free water, although skimming boxes are provided for the removal of liquor at any depth.

No chemical or temperature control is provided. A pit receives sludge until it is full, and the flow is then diverted to another pit until the first pit is lowered by filtration into the ground. This brings about a series of intermittent fillings and effects some seeding. During filling periods pits become more acid, especially in cold weather.

Primary sludge enters the pit at a pH of about 6.8 and the activated sludge at 7.3. Under normal filling conditions the mixed sludge seldom drops during digestion below 6.8, and, on standing, without the addition of fresh sludge, goes to 7.8 and 8.0 in a short time. Above figures indicate conditions under which digestion usually takes place but hard and fast reaction and time figures cannot be given. Relative amounts of fresh and digested sludge and temperature govern the rate of reaction change.

A tabulation showing figures obtained in taking stock of sludge in the various pits is given. The large reduction in volume is attributed to the nature of the soil underlying the pits and the extent of digestion of solids to the long period of time involved, although the method of filling produces a mixture of some very old and some very fresh sludge in each pit. The mixture has never drained to less than 80 per cent of moisture and for the most part a moisture content of about 85 per cent obtains.

The author believes that as the proportion of activated sludge increases, satisfactory draining becomes more difficult and that drying beds will be required to put sludge in a condition to be handled. The present use of sludge by growers has not solved the problem of disposal but its use may be developed and extended as growers become familiar with its advantages.—C. K. Calvert, *Eng. News-Rec.*, 100:230 (Feb. 9), 1928. Abstr. C. H. Kibbey.

The Ozone Fallacy in Garage Ventilation—Dr. Salls presents a discussion of the literature concerned with the reaction of carbon monoxide and ozone, and from this discussion one must conclude that there is great variance in the literature concerned with this reaction.

The experimental studies which Dr. Salls presents are analyses of the atmosphere from a gassing chamber, in which carbon monoxide is mixed with ozone at room temperature. The atmosphere was sampled from the beginning of the mixture of the gases to a period 140 minutes thereafter. The carbon monoxide determinations were made by means of the Sayers-Yant method, using defibrinated steer's blood as a blood reagent. Three samples of the atmosphere were obtained prior to starting the ozonator, the three samples yielding the following results in chronological order: 13, 9 and 7 parts of carbon monoxide. After allowing the ozonator to operate for about 20 minutes, a sample was taken which yielded somewhat less than 5 parts of carbon monoxide. Subsequent samples were taken to the end of 140 minutes. When these samples were plotted against time they fell on a fairly uniform curve which appears to be the curve of absorption of gas by the chamber walls and leakage through them. The starting of the ozonator appears to have in no way altered the shape of the curve.

Dr. Salls concludes that this study indicated no evidence of an appreciable action of the ozone on the carbon monoxide.—Carroll M. Salls. *J. Indust. Hyg.*, 9:503 (Dec.), 1927. Abstr. Leonard Greenburg.

Preventing Excessive Smoke—One of the most important discriminations in the field of smoke abatement, so far as railroading is concerned, is the differentiation between smoke prevention and "smoke painting" or whitewashing. The latter is merely a method of discoloring smoke by means of wet steam or vapor, whereas the former, the correct method, requires improved combustion for its treatment. The author further points out that smoke burning or smoke combustion are misnomers because smoke already formed ordinarily cannot be burned or consumed. The greatest difficulty in avoiding smoke is usually on switch or transfer engines, owing to the nature of their work, and on road engines starting out from their terminal. Here it is necessary to rely on the blower and "smoke burner," by means of which additional air is admitted to the fire box, this air serving to prevent the formation of smoke. When the steam jets are used in the fire box without inducing the flow of additional air into the fire box, the steam jets merely serve to paint the smoke and not to prevent it.

In addition to this generous supply of air, a sufficiently high fire box temperature is necessary to prevent smoke formation. And finally, it is to be pointed out that the proper method of firing has considerable influence on smoke formation. Only a sufficient amount of fuel should be placed in the fire box at each firing as will insure proper combustion. —J. F. Bjorkholm. *Railway Age*, 84: 357 (Feb. 11), 1928. Abstr. Leonard Greenburg.

Iron and Manganese Removal at Wausau, Wisc.—This is a description of a 3-4.5 m.g. iron and maganese removal plant, costing $125,000. Well water of poor physical character is being effectively treated by aeration, coagulation and sedimentation, and filtration. Final chlorination is not needed. The aerator consists of shallow wooden racks, holding 5 inch layers of coke and 2 inch layers of maganese dioxide ore, which are arranged in vertical tiers. The aerated water is dosed with 7.4 g.p.g alum and 3.5 g.p.g. lime before dis-

charge through a baffled mixing chamber into a 45′ x 45′ x 16′ Dorr clarifier, and then into three sedimentation basins, each 36′ x 45′ x 14′ in size. Six rapid sand filters are fitted with porous concrete slab underdrains capable of passing 150 g.p.m. per sq. ft. Slabs are bolted to concrete stringers and have joints cemented. Slabs were made of ¾ to 1 inch gravel. A gravel layer of this size is used over slabs to depth of 6½ inches; then one of ⅜ to ⅝ inch size for a depth of 3 inches; and then one of $\frac{3}{16}$ to ⅜ inch size for a depth of 3 inches. Fine sand to depth of 28 inches is placed upon gravel. Complete control and recording apparatus is provided. From 2½ to 3 per cent wash water is used, which is somewhat high because considerable fine floc reaches the filters.—Emil Flatter. *Am. City* 38:125 (Mar.), 1928. Abstr. C. R. Cox.

A New Larvicide for Mosquitoes—The authors experimented with chemically pure borax, with crystalline and calcined sodium borate, and with commercial borax. The latter was found to be as efficient as any. After experimenting with various concentrations, the authors conclude that ordinary borax in the concentration of 1.5 gm. per liter of water proved an efficient larvicide for mosquito larvae. This retains its action for long periods of time in wooden pails. Borax did not stop egg laying and hatching, but in no case did the young larvae live for more than 2 days.

They quote reports that borax pools do not produce mosquitoes and that, in a borax country, this substance is not absorbed into the ground but crystallizes on evaporation of the water and is ready for the next rain. The authors suggest that there is a field of usefulness for borax as a larvicide, in such places as fire barrels, etc.—Robert Matheson and G. H. Hinman. *Am. J. Hyg.*, 8:293 (Mar.), 1928. Abstr. L. L. Williams, Jr.

The Rôle of Ammonia in the Purification of Water—During the 1925 maneuvers of the British Army, Major Harold introduced a new method of purifying water. This method assisted in preliminary treatment with ammonia followed by sterilization with chlorine. In this way the absorption of chlorine is restrained and its germicidal powers are enhanced. The sterilizing agent is not unduly deviated by organic matter and a safe water is produced, practically free from unpleasant tastes. The chlorine solution was given initial contact with the ammonia prior to dosing into water and the highest concentration which did not show evidence of available chlorine was fixed upon as the optimum. Two compounds were produced by the interaction of 1 equivalent of chlorine with ½ an equivalent of ammonia. In a foul water containing urine and nitrites in unreasonable amount some absorption of mono-chloramine was evident but with all casual waters encountered a dose of 1 p.p.m. has always sufficed. Dichloramine is slower in action but possesses greater stability than mono-chloramine. Normally each water cart having a capacity of 110 gal. is dosed with 1.25 gm. of ammonium bicarbonate and about 3 gm. by weight of dry chlorine gas.—C. H. H. Harold. *J. Roy. San. Inst.*, 48:484 (Mar.), 1928. Abstr. W. L. Havens.

INDUSTRIAL HYGIENE

EMERY R. HAYHURST, M.D., AND LEONARD GREENBURG, PH.D.

Industry and Public Health—One concern employing 4,500 employes found, before instituting medical service, that they were losing from cost of illness due to sickness $67,500; cost of absence from sickness, $150,000; production loss from sickness on the job, $50,000; loss to workers in wages, $162,000; loss through reduced earning capacity, $40,000; medical expense to workers, $45,000; public expense and charitable relief, $56,000; total, $570,500.

The justification for industrial medicine lies not only in the reduction of absences from sickness, but also in the prolongation of lives of usefulness of the older and more experienced employes. We have no statistics on this subject, and it will be a long time before the ultimate effect can be appraised.

Statistics further show that the average industrial worker is absent from duty 6 to 9 days each year due to insignificant ailments. In the case of salaried workers this loss falls wholly on the industries; while in the case of hourly paid workers the loss is divided—the worker losing the wages, the concern the output.

When absenteeism lasts so long as to require workers being replaced, the loss to the industries increases heavily. Estimates vary as to the cost of hiring an employe, but besides the first cost, wastes of one kind and another are involved. Often the worker is no better in health than the one replaced. The accident hazard is increased, output lessened, and defective work increased. Here is another economic reason why big business is interested in health.

As to results accomplished from the direct application of health work to industries, the Metropolitan Life Insurance Company's figures are probably more accurate than any others we have. Its statement for the year ending December 31, 1926, shows that lives saved among industrial policy holders from 1911 to 1925 in excess of general mortality improvement numbered 240,000; lives saved among policyholders in 1926, as compared to the death rate in 1911, numbered 63,330. In other words, by the application of protective health measures to industrial workers it paid 63,330 fewer death claims. This means that not only fewer death claims were paid, but it also means happiness and well-being for thousands of families.—T. F. Abercrombie, Proceedings of the Fourteenth Annual Meeting of International Assoc. of Industrial Accident Boards and Commissions, Atlanta, Ga., Sept. 27-29, 1927, *U. S. Dept. of Labor, Bur. of Labor Statistics. No. 456*, Feb., 1928, p. 135.

Cancer Statistics as They Appear to a Pathologist—The author presents many arguments bringing him to the conclusion that the increase in the cancer rate is just about the same as the increase of the other three common causes of death in those who have passed the prime of life; namely, cerebral hemorrhage, nephritis and heart disease. Also diabetes, which is chiefly an old age disease shows the same trend. "I find myself unable to accept anything about cancer as finally established by statistics."

I am not by any means sure that changes of habits and occupations may not be having some influence on the incidence of cancer. For example, a smaller proportion of the population are now engaged in outdoor occupations,

which theoretically favor the development of cancer of the skin of the face. Chimney sweeps' cancer may be decreasing or vanishing with modern house construction and heating in the countries where it once occurred. Bladder cancer may be increased as an industrial disease through the development of dye factories. Perhaps changes of diet or culinary technic may influence the occurrence of cancer of the stomach—but in which direction there is no reliable evidence. There seems to be little doubt that primary cancer of the lung is now a more common disease in Europe and America than it was even ten or fifteen years ago. If this is a sequel of influenza, as some believe, the increase should be transitory; but if it is the result of irritating chemicals from industrial processes, or the dust from tarred roads, which are among the possible exciting causes, the increase in this form of cancer may become permanent and significant. So perhaps there are changes in the incidence of cancer, independent of the increased age level of the population. My object is not to deny the existence of an increased incidence or to establish the existence of a decreased frequency, but merely to indicate how unconvincing the evidence appears to one whose daily observation impresses him with the inaccuracy of the recorded statistical data.

—H. Gideon Wells, *Studies from the Otho S. A. Sprague Memorial Institute*, Collected Reprints, Vol. XV, 1927, 31 pp.

Caring for Injured Workers—This *Bulletin No. 82* of the Series of Safe Practices Pamphlets discusses the necessary equipment and attendance for first aid and other care of injured workers. The article is profusely illustrated and has been prepared by a special committee having the benefit of great experience in accident prevention and first aid. The report is in the form of a code.—*National Safety News*, Mar., 1928, pp. 23-32.

Iron Foundry Workers Show Highest Percentage of Deaths from Pneumonia—This article presents a table covering 15 occupations which shows deaths from pneumonia standardized for ages 15-64 years with iron and steel molders and foundry workers at the head, having a percentage of 17.6 as against the next in order, cordage and kelp mill operatives, with a percentage of 14.8. Coal miners (underground) have a percentage of 12.0 deaths due to pneumonia in all cases of death. Coal miners (underground, except coal) are at the foot of the list with 9.4 of deaths due to pneumonia. The article points out that only 7.7 per cent of deaths among all occupied males are attributed to pneumonia. For iron foundry workers the percentage of deaths is well above the average at every age from 15 to 64 years. In the age period 25-34, it is over three times the average. Pneumonia was the chief cause of death among them. This is true of no other occupational class included in the Metropolitan investigation. The article notes that the workers listed in the table have three distinct types of hazards; namely, dust, extreme heat, and sudden variation in temperature and exposure to weather. Similar comparisons with ten occupations in the British industry show the highest death rates from pneumonia in order of magnitude as brass foundry laborers, grinders and cutlers, stevedores, cotton glow room operatives, iron foundry furnace men and laborers, cotton carders, puddlers, metal polishers, and "other" dock laborers.—Metropolitan Life Insurance Company *Statistical Bulletin*, IX, 3:1 (Mar.), 1928.

FOOD, DRUGS AND NUTRITION

WALTER S. FRISBIE

Vitamins of Orange Juice—Only recently has investigative work shown that orange juice contains other vitamins than the antiscorbutic C. The juice was obtained from ripe California oranges which were peeled before pressing to obviate contamination of the juice by the oil known to be rich in vitamin A. The juice was filtered free from cell tissue. Doses of orange juice, 7.5, 5.0, 2.5 c.c. respectively in the case of rats which had evidence of vitamin A deficiency by development of xerophthalmia, indicated that the dose of 5.0 c.c. or more met with prompt response, while the animals receiving 2.5 c.c. died in 3 weeks from vitamin A deficiency. This was confirmed by a second experiment, employing positive and negative controls, positive being supplied with potent cod liver oil. The negative control died and experimental animals receiving 5 c.c. orange juice compared favorably with the positive in appearance and as indicated by autopsy. Preliminary experiments show that doses of 5 c.c. orange juice were insufficient to supply rats with vitamin B. This was checked with positive and negative controls, the positive controls receiving an equivalent of 0.6 gm. of marmite extract. Animals receiving daily doses of 7.5 c.c. of fresh juice showed a tendency to fall off in growth after the third week. The dose was raised to 10 c.c. which was continued and there was little difference between these animals and the positive control. The autopsied rats were normal. The juice was tested for vitamin D by the Zucker technic in which the fecal reaction is made alkaline by rachitogenic diet. Antirachitic substances fed at this time convert the reaction to acid within 3 to 4 days, and the persistence of alkalinity is regarded as indicative of the absence of vitamin D. After feeding doses of 10 c.c. per day of fresh orange juice for 2 weeks the fecal reaction was still alkaline. Supplements of cod liver oil potent in vitamin D changed the reaction to acid within 4 days, but of those on orange juice it remained alkaline, indicating probable absence of vitamin D. While the author concludes that the study on vitamin D should be repeated, it was pointed out that chemical experiments showed that children may develop rickets even when taking appreciable amounts of orange juice.—S. G. Willimott, *Biochem. J.* 22:67, 1928.

Iron in Nutrition. VI. Iron Salts and Iron-Containing Ash Extracts in the Correction of Anemia—A series of experiments is recorded, undertaken for the purpose of correcting a nutritional anemia developed in young rats in a stock colony which were weaned at from 3 to 4 weeks of age (50 to 60 gm. weight), and placed on a diet of cow's milk, anemia being characterized by very low hemoglobin levels. The effects of inorganic iron salts were studied, making use of a commercial chloride and a C. P. ferrous ammonium sulfate. The iron salts were fed at a level of 2 mg. of iron daily, 6 days a week, and later at a level of 0.1, 0.15, 0.5, and 1.0 mg. In no case did these small additions of iron correct the anemic condition, and all of the animals died after showing only slightly increased hemoglobin. The effect of iron in the form of ash and dried lettuce was also tried. The first feeding represents a level of 1 gm. of dried lettuce daily, 6 days a week, which was quite effective in

correcting anemia. Beef liver, kidney, and muscle, yellow corn, and wheat were selected for another experiment. The quantities of these animal tissues were sliced, dried, and ground and the corn and wheat were finely ground. All materials were fed at levels of 0.5 gm. per rat 6 days per week. This level in the case of beef liver introduced about 0.15 gm. of iron. Beef liver resulted in steadily increasing hemoglobin formation as well as good growth and physical appearance. Beef kidney was less favorable and beef muscle practically inert. Corn and wheat were less valuable and in most cases the animals died. Further experiments were initiated to determine reasons for the effectiveness of liver material. Various salts of iron, chloride, sulfate, acetate, citrate, and phosphate were prepared. These salts were fed at a level of 0.5 mg. 6 days per week. All of these salts failed to increase materially the hemoglobin, the majority of the animals dying in 4 to 8 weeks. Hydrochloric acid extracts of the ash of lettuce, yellow corn, and beef liver were made. These were compared in feeding experiments with ferric chloride and with the ash of liver ignited with calcium carbonate and were fed in such amounts as to furnish practically 0.5 mg. of iron. Marked hemoglobin regeneration resulted in all cases except with the addition of ferric chloride alone. It is concluded as a result of data that in addition to the iron which is essential the ashes and extracts of the ashes of corn, lettuce, and beef liver, contain some other substance necessary to restore hemoglobin, evidently inorganic in nature.—J. Waddell, C. A. Elvehjem, H. Steenbock and E. B. Hart. *J. Biol. Chem.*, 77:777 (May), 1928.

VII. **Copper as a Supplement to Iron for Hemoglobin Building in the Rat**—In the course of the study of the effect of iron salts on anemia (see preceding abstract) investigators obtained a commercial preparation of liver which has proved effective in the treatment of pernicious anemia. This preparation is fed at a 3 gm. level, 6 days per week and at the same level supplemented with 0.5 mg. iron as ferric chloride. All animals responded, slightly better results being evident in those receiving the iron supplement. The ash and a hydrochloric acid digest of the ash were fed to anemic rats at approximately the same iron level and were found effective in correcting the anemia. The ash of a commercial liver preparation was fractionated into three parts, hydrogen sulfide precipitate, hydrogen sulfide—ammonium sulfide precipitate, and filtrate. The precipitates after solution in acid were evaporated taken up with water and, together with the evaporated filtrates suspended in water were fed at levels representing 0.3 gm. of the original preparation. The hydrogen sulfide fraction alone was potent. Previous to this experiment, the effect of copper as copper sulfate had been tried by addition to the whole milk diet, as a result of observing a pale blue color in the ash of some material which had been studied. The effect of this salt on one single animal feeding was remarkable as indicated by the weight record and hemoglobin curves. This suggested that the hydrogen sulfide fraction of the liver ash was the one containing the most copper and for that reason particularly potent. Experiments were undertaken with copper feeding at levels of 0.01, 0.05, and 0.10 mg. of copper as the dose per rat, giving 0.05 mg. of iron as ferrous chloride in addition. In the 0.05 and 0.10 mg. levels of copper, rapid recovery was noticed. A determination of the copper content of the commercial liver preparation showed 0.016 per cent copper. A discussion as to the presence of copper in the animal organism and the probable manner in which it functions conclude with the suggestion that it may act as a catalyzer for certain reac-

tions concerned in hemoglobin building and that the work emphasizes the necessity for a more intensive study of the effects of small amounts of inorganic elements in nutrition.—E. B. Hart, H. Steenbock, J. Waddell and C. A. Elvehjem. *J. Biol. Chem.*, 77:797 (May), 1928.

Chemical Composition of the Milk of Cows Receiving Cod Liver Oil—This is a preliminary paper, recording experiments carried on over a period of 5 months, on 4 cows which received cod liver oil and peanut oil, all on similar rations. The quantities of the oils administered are given and also the complete analyses of the milk from the cows. Results indicate that the cows receiving cod liver oil produced milk which contains an increased percentage of total calcium. Results are regarded as insufficient to justify definite conclusions but the fact that previous investigations have shown that butter from milk of cows on cod liver oil supplement is much more antirachitic than butter from cows not receiving cod-liver oil, probably warrants further study which is in progress. —Elfrida Constance Victoria Mattick, *Biochem. J.* 22:9, 1928.

Studies On the Effect of Heat On Milk. IV. The Iodine Content—This work was undertaken in view of the reports that the reduction in the soluble calcium in milk by heat adversely affects metabolism and may eventually give rise to rickets in young animals and in children. Cod liver oil is stated to improve the growth promoting properties of heated milk. Since this is rich in iodine this study is suggested. Separated cow's milk, fresh, pasteurized, and boiled, was prepared and the iodine determined by the Leitch-Henderson modification of Fellenberg's method. The iodine averaged in micro-milligrams per 100 c.c. 5.69 for fresh, 4.51 for pasteurized, and 4.23 for boiled.

Both cow's milk and goat's milk were dialysed in determining the amount of iodine diffusable. It was practically the same in both, or 83 per cent of total iodine.—Hugh Edward Magee and Agness Elisabeth Glennie, *Biochem. J.*, 22:11, 1928.

Value of Whole Potato in Human Nutrition—Reference is made to the work of Hindhede who, with his collaborators, was able to live over long periods of time in which nitrogen was derived solely from the potato. His investigation is here repeated, continuing the experiment for several months. The subjects were two healthy adults, a man aged 25, and a woman aged 28, both doing laboratory work. The diet consisted of potato with butter or pork fat with the addition of apples, pears, tea or black coffee with sugar. The amount of fat consumed was from 120-150 gm. daily. Potatoes were steam-cooked. The experiment extended over 167 days and the nitrogen balances are submitted. The nitrogen content of the potatoes was 0.34 per cent. Nitrogen equilibrium was attained by both subjects and a daily intake of nitrogen was slightly under 5.6 gm. for the man and 3.5 gm. for the woman. The authors conclude this is a confirmation of Hindhede's experiments, indicating the high value of potatoes as a sole source of nitrogen for the human adult.—Stanislaw Kazimierz Kon and Aniela Klein, *Biochem. J.* 22:258, 1928.

CHILD HYGIENE

MERRILL E. CHAMPION, M. D.

Tuberculosis in Infancy and Childhood—The time is coming, says Dr. Shapero in his article with the above title, when we can expect to see the control and perhaps the elimination of tuberculosis. This will be brought about by attention to the disease in the child. The author's conclusions are worded by him as follows:

1. Tuberculosis is usually due to human tubercle bacilli and most often gains entrance by inhalation. Inheritance plays practically no part in the perpetuation of this disease.

2. Bovine infection occurs in 25 per cent of the cases and is oftener present before than after 5 years of age.

3. Contact with tuberculous patients is of preëminent importance in the spread of tuberculosis. Milk plays a minor rôle. The earlier the contact, the more likely the infection develops; the earlier the infection occurs the greater are the chances for disease production and, furthermore, the earlier the disease, the graver becomes the prognosis.

4. A positive tuberculin reaction in the older child does not necessarily mean disease, but denotes past infection. A positive reaction is obtained in 80 to 90 per cent of all children under 15 years. Under 2 years a positive reaction usually signifies disease.

5. The child mortality under 12 is directly due to tuberculosis in 15 to 30 per cent. The mortality from pulmonary tuberculosis has diminished, but meningeal and miliary tuberculosis still play havoc with the infant. The prognosis is better at present than it formerly was.

6. The symptoms of tuberculosis are as a rule disturbances of nutrition and general well-being.

7. The X-ray is of great assistance in diagnosing this condition.

8. Heliotherapy and tuberculin are beneficial in selected cases when used with proper care.

9. There is neither an absolute nor a natural immunity to tuberculosis, skin sensitiveness resulting only after infection.

10. The prevention of tuberculosis in infancy and childhood depends on avoidance of contacts under the age of 2. There should be a careful supervision of the milk supply. If prevention is at any time possible with Calmette's B.C.G., the most fruitful time for such is just following birth. Measles and pertussis should be prevented in infancy as these usually light up an infection and produce disease. The most favorable time of exposure is between 3 and puberty since the lymph glands function best at this time.

11. Physical defects such as posture, dental caries, hypertrophied diseased tonsils should receive attention and correction.

12. The time is not far distant when tuberculosis will be better controlled and possibly eliminated.—

Tuberculosis in Infancy and Childhood, A. A. Shapero, M.D., *Arch. Pediat.*, May, 1928.

The Health of Rural School Children—Dr. James Frederick Rogers of the Federal Bureau of Education describes Ten Steps in the Promotion of Health in Rural Schools. Starting out as Step One, with a real desire for health as a genuine as well as theoretical objective in education, he goes on to enumerate as Step Two the backing of the board of education and support of local groups such as Parent-Teacher Associations, physicians and dentists. Then follow the distribution of educational leaflets; utilizing existing agencies; surveying the school plant to decide what changes are needed, and acting on the recommendations which come to the fore after the survey has been completed. Step Six involves health examinations, both medical and dental. Step Seven translates the results of the physical examination into active participation in the formation of health habits. Step Eight has to do with the improvement of the nutrition of the child through the employment of the school lunch. Step Nine brings us to the playground as a

field of activity for physical education. Lastly, Step Ten has to do with the type of expert supervision which should be given to keep the health program moving forward as rapidly as it should.—Ten Steps in the Promotion of Health in Rural Schools, James Frederick Rogers, M.D., *School Life*, XIII, 10 (June), 1928.

Baby Week in the East—From far off Delhi in India comes the story of an annual Baby Week held in a nice shady garden under the walls of a fort. Not only were the babies themselves present but there were exhibits showing what the normal baby needs to keep him well and comfortable, food charts, and even a laundry demonstration. A model street with a covered well, a bin for refuse, and clean shops where protection from flies was carried out, was contrasted with the ordinary dirty Indian street with all that accompanies it. The element of competition is brought in through an annual reward of a silver cup for the most effective local health and Baby Week campaign held anywhere in India.

Maternal Mortality—Investigations into the causes of maternal mortality have become less uncommon in this country than they used to be. They apparently do not arouse any undue amount of antagonism on the part of the practicing physician, provided these studies are carried on with discretion.

The *Journal of the American Medical Association*, however, reports a joint letter to the *London Times* from leading obstetricians who deprecate the suggestion that the local health authorities undertake an investigation into the lack of reduction of mortality of childbirth. The point they make is that this type of study is not likely to offer any solution of the problem, since in their opinion it is in the nature of an attempted short cut to a solution which has baffled explanation throughout the world for many years.

It is well recognized by these critics that puerperal fever is infectious but they maintain that it is still a matter of controversy as to what proportion of cases arise from a latent infection within the patient herself and what proportion from infection carried to the patient. There is also the problem of the factors which determine susceptibility to infection and of the part played by lowered resistance of the patient. Certain anomalies are pointed out: why should a rapidly fatal infection follow an absolutely natural childbirth at times, while an uneventful recovery may follow complications of a nature to arouse expectation of unfavorable results. Toxemias too have their puzzling aspects.

The conclusions which the practicing obstetricians reach are that a close alliance is needed between the physician, the biochemist and the bacteriologist, and also financial assistance for the establishment of clinics and laboratories. —Foreign Letters, *J. A. M. A.*, May 19, 1928.

Prize Competition for a Book on Child Hygiene

THE Royal Society of Hygiene of Milan, Italy, has announced a prize competition, open to the physicians of Italy, for the best handbook on the hygiene of children between the ages of 7 and 15 years. A prize of 5,000 lire will be given to the winner. This book is to form a part of a series on maternity and child hygiene.—*Pediatria*, Naples, Dec. 15, 1927, p. xxxii.

PUBLIC HEALTH NURSING

MIRIAM AMES, R. N.

Portable House for Office and Health Center—The *Health News* of the New York State Department of Health, has an account of the way an ingenious nurse in Putnam County, N. Y., solved the problem of headquarters. The suggestion might well be followed by other county public health nurses in the great open spaces where, seemingly, office spaces are frequently lacking.

The idea of having a portable house for use as a combined office and health center was fostered by the nurse and eagerly embraced by the committee on nursing activities after eliminating all other possibilities. The enthusiastic group purchased for $664.00, including delivery, a house 18 by 21 feet. On land loaned for the purpose, interested members of the community assisted in putting up the structure.

The house was lined with sheet rock as a protection against the cold weather, and a stove was found to heat the building adequately for the monthly health conferences. It was wired for electricity, and the outside given two coats of white paint. Practically all the furnishings were donated. The total cost of the house, exclusive of equipment, was $1066.00.—Public Health Nurse Uses Portable House for Office and Health Center, *Health News* New York State Dept. of Health 5, 23:90 (June 4), 1928.

The Frontier Nursing Service, Inc.—The Third Annual Report of the Frontier Nursing Service, Inc., is contained in the *Quarterly Bulletin* for June. This booklet of 60 pages gives a detailed account of the financial status of the organization, a statistical summary of the nursing service for each center and a list of the contributors. The latter lists impartially gifts ranging from veterinary advice to thousands of dollars.

Something of the struggles of the first two years we know. One brief paragraph in the foreword sums up the progress which has been made in construction during the past year.

> The work of the Service has been greatly augmented by its building program during the past year. The Up River Center (Jessie Preston Draper) is finished; the Possum Bend Center (Frances Bolton) was entirely built; the Hyden Hospital and Health Center has been carried nearly to completion, and the preliminary arrangements are made for the new center (Clara Ford) in Clay County, on Red Bird River near the mouth of Big Creek.

The hopes for the future health of the citizens of Leslie County lie in these rugged strongholds, through which the nursing service is administered. The centers are all located on mountain trails, anywhere from 6 to 34 miles from the railroad.

The new hospital and health center at Hyden, Ky., is within a month of completion. It is to have two wards of 4 adult beds each, with space for as many children's beds, and for at least 25 additional patients for special clinics. An operating room, a laboratory for the health officer, a dispensary and waiting room, and suitable kitchens, supply rooms and baths are listed among the special features of this new structure. Sleeping quarters and living quarters are provided for the nurses of the district service, the supervisor and a bookkeeper.

> Note: Previous to the Biennial Nursing Convention at Louisville, Mrs. Breckinridge issued a cordial invitation to the nurses who were attending the convention to visit the centers. Twenty-five guests could be accommodated and the visitors were to travel from

the railroad to the various centers either on horseback or by mule teams.

Who can foresee what this taste of frontier life will do toward enlisting staunch support and even recruits for service. A sense of romance and love of adventure still appeals to nurses, young and old.

Preschool Education—The major part of the June number of *The Public Health Nurse* is devoted to an interesting discussion of the present-day movement in preschool education. In the leading article, Education of Preschool Children, Dr. Lois Hayden Meek, Educational Secretary of the American Association of University Women, describes the different phases of the movement which have been developed in adapting education to the tiny child's needs. With the acceptance of the discoveries of psychologists that the formation of a child's personality and character begins at birth and is well on its way to good or bad by the time the child enters school, and that in teaching, the life of the child must be considered as an integrated whole, there has come a marked change in educational methods.

Nursery schools have developed in ever increasing numbers, modelled first on the English plan, but gradually being changed to meet American needs. Here the child's life, play, health habits, contacts with others, all the daily mental and emotional experiences are under the guidance of a trained, understanding person during the hours of school. But with the recognition by both parents and educators that those hours constitute but part of a child's day and that the greater part of his training still goes on at home, a concerted effort has been made to provide for parental education at the same time. Individual conferences over individual child problems, group discussions, lectures, and selected readings about the various needs of a growing child have been tried successfully in many places.

For special behavior problems, many communities now have behavior clinics under trained psychiatrists, while medical clinics are used for all children for the maintenance of physical health which is fundamental to any sound growth.

Many nursery schools are also training centers for teachers, and as we are becoming better equipped with well rounded-out nursery school centers, more and more teachers are taking their entire training in this country.

In a field so new, we are not yet completely equipped with a background of exact knowledge about the life of the normal child. Therefore, highly important in the new educational movement are the research studies which are being made of child behavior and normal development, mental, physical, emotional and social, with interpretation of them from the basis that "the child's life is an integrated whole."

Anna Heisler, of the American Child Health Association, in the next article, Classes in Child Care for Children, discusses ways that are being tried to provide a preparation for the coming generations of mothers by teaching the fundamental principles of child care to girls in school. Perhaps ultimately the public school curriculum will include classes in child care for young girls and boys, with proper training of teachers for presenting this subject. Already some states report courses for teachers in infant or child hygiene. Wisconsin, particularly, has adopted a slogan "Every Girl Educated for Intelligent Motherhood," and the Bureau of Child Welfare, the State Department of Public Instruction, the State Board of Vocational Education, and the State Board of Normal Regents are combining in an effort to provide adequate courses in infant and child hygiene for school girls.

In home economics courses in many states, instruction in child care is included.

Apart from such formal teaching,

which has not been extensive, much has been done through Little Mothers' Leagues and Red Cross home hygiene courses to give young girls an opportunity to learn some of the fundamentals of sound motherhood.

In an article by Isabel W. Baker, of the American Red Cross, Bringing up Good Husbands, it is shown that not only girls but also boys are responding eagerly to home hygiene classes and are learning how to care for little children.

There are other articles, one suggesting functions for the public health nurse in the nursery school, and one describing the nursery school at Vassar College, which is being conducted in connection with the Department of Euthenics.—*Pub. Health Nurse,* 20, 6 (June), 1928.

News from the Biennial—We have heard from good authority that 4500 nurses registered at the convention. Forty-eight states were represented, as were also Canada, Cuba, Porto Rico and Hawaii. Eighty lay members of public health nursing associations were in attendance with representation from 22 states.

The following were elected officers and directors of the National Organization for Public Health Nursing for the next 2 years:

President—Anne L. Hansen
Vice-President—Winifred Rand
Second Vice-President—Sophie Nelson
Directors—Nurse Members—Alta E. Dines, Ann Dickie Boyd, Gertrude Bowling, Grace Ross
Directors—Sustaining Members—Mrs. Chester C. Bolton, Mrs. C.-E. A. Winslow, Anna Huber, Mrs. John A. Haskell, Dr. Ira V. Hiscock
Nominating Committee—Mrs. T. Kraker Guthrie, I. Malinde Havey, Naomi Deutsch

Dr. May Ayres Burgess, Director of the Committee on the Grading of Nursing Schools, presented her report in a masterly way. The complete report may be found in Dr. Burgess's book—*Nurses, Patients and Pocketbooks.*

A Lay Members Section in the National Organization for Public Health Nursing was formed and is an important feature of the Louisville Biennial. The adoption of a Manual for Board Members will standardize the form of organization and of boards and committees.

The Public Health Nurse will contain more complete reports of the section meetings.

Milwaukee has been selected as the city in which the 1930 Biennial Convention will be held.

Open Air Schools

AS a means of improving the health of underfed or sickly children of school age, 3 open air schools have been established in Montevideo, Uruguay. These schools are situated in parks on the outskirts of the city. The school physicians select the children for admission to them. The children spend from 6 to 8 hours a day in the schools, summer and winter. The program is arranged so that class periods alternate with rest periods in bed, both of which are held in the open air.

The children are weighed weekly, measured quarterly, and health records are kept, also nourishing meals are provided.

The three schools accommodate 600 children, whose average stay is 6 months. —*Boletin del Institute Internacional Americano de Proteccion a la Infancia,* Montevideo, Oct., 1927, p. 199.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN*

Your Publicity Program for 1929—The steps to take in preparing a year round program of health publicity will be discussed in a meeting which will run through two sessions of our section program at the A. P. H. A. convention in Chicago next October. In preparation for this meeting the program committee will welcome copies of publicity plans or outlines used by health departments and health organizations. Send to the editor of this department.

In a series of brief talks speakers will analyze the problems which come up when publicity is in the planning stage. On what basis do you choose your objectives? How select and classify your audiences? What tests of reliability and appropriateness determine your choice of talking points? How will you find the best method of approach to your audience? Which of the 57 varieties of publicity methods will you use? How prepare a schedule or calendar? Come and take part in the discussion and also make this meeting an occasion for starting to map out your 1929 program.

A New Weapon Against Typhoid—State departments and state associations are provided with some good material in the recent news from Albany, N. Y. As discussed in the Law and Legislation Department (Apr. and June, 1928), the City of Albany must pay damages because of disease contracted through the municipal water supply.

The immediate strategy is to give widespread publicity to the mere fact of those awards being given by the courts. The more people know the possibility of such damage suits from typhoid victims the better will state or local forces seek safer water supplies.

MOTION PICTURES

Seven half day showings of general health and mouth hygiene pictures at the American Dental Association meeting, Minneapolis, Minn., Aug. 20-23 will give an opportunity to see many of the old and new films. Write to 58 East Washington St., Chicago, Ill., for detailed program.

The cartoon film, Health Twins at Work, which was made for the American Social Hygiene Association several years ago, has been edited and brought up to date, with its main interest centered on tuberculosis.

The scene opens on a courtroom where the judge, representing Public Opinion, presides. Two sprightly clever little men, the public health twins, are introduced respectively as Science and Administration, with the explanation that "the control of disease depends upon science and administration." The judge orders the three culprits, tuberculosis, infantile diarrhea, and diphtheria to stand before him, and when they have taken their places, all else of the scene except the three prisoners fades out and the caricature of tuberculosis slowly dissolves into a vertical bar. In quick succession the other two figures are likewise transformed into vertical bars, the resulting pictures being a bar graph of the mortality rates of the three diseases in 1900, each bar being carefully titled and of proper height in relation to the other.

Prints may be purchased through the American Social Hygiene Association, 370 Seventh Ave., New York, N. Y.

AWARDS

An Honor Roll of Cities having no accident fatalities during the preceding month is published in *Public Safety*, National Safety Council, Chicago, Ill.

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

In the belief that there is no sharper tool of social and civic betterment than a cartoon which combines a penetrating idea with good art, the Harmon Foundation offers through *The Survey* 16 awards for cartoons during the year beginning April 1, 1928. The only restriction as to subject is that the cartoons must, in the opinion of the judges, bear a direct relation to subjects which tend to make of our American communities better places in which to live and to work. An award of $250 to be made quarterly and three awards of $50 each, also to be awarded quarterly, are described in the announcement. Address, Harmon-Survey Cartoon Awards, 112 East 19th Street, New York, N. Y.

Wild West, by Viola Paradise. *Pictorial Review*. April, 1928. This short story won first place in the contest conducted by the Committee on Publicity Methods in Social Work. Based on the author's field experiences while with the Children's Bureau the story develops in dramatic fashion a phase of the need for rural maternity service. Miss Paradise has had numerous stories and articles in *Colliers, Harpers, Atlantic* and *Forum*.

NEWSPAPERS

Again *Editor and Publisher* issues its International Year Book edition with lists of dailies in many countries; city and Sunday editors named for many United States and Canada dailies; numerous classified lists; art and literary markets in the United States; books, schools, syndicates, mat and cut services, etc., 352 pages 10 by 13 inches. Jan. 28, 1928. Times Bldg., New York, N. Y. $4.00 with year's subscription.

Fair and wise policies in dealing with the newspapers in emergencies are outlined in "Helpful Relations with Local Newspapers," by F. H. Williams. *Trained Nurse*. Oct., 1927. Especially important are the detailed suggestions as to information to be supplied in writing, and the handling of telephone interviews.

HONORABLE MENTION

Health, New Hampshire State Board of Health: for list of contents on cover page.

Fifth Annual Report of Quebec Provincial Bureau of Health: for a table of contents (called an index).

REQUESTS

Outline diagrams of the digestive tract are desired by Mabel Milhan, Home Demonstration Agent, Canton, N. Y. Please send your answer also to editor of this department.

Copies of posters and other material, as well as suggestions helpful in preparing a health exhibition will be appreciated by Dr. T. N. Mazumdar, Health Officer, Calcutta, India.

"On the average, what proportion of a welfare or nursing budget do you think might well be devoted to publicity purposes?"

Copies of The Cheapest Health Insurance, a 4-page folder, are sent by Dr. Robert E. Plunkett, Division of Tuberculosis, New York Department of Health, Albany, N. Y., in response to a "request" in the May issue. It embodies an interesting idea for boosting health examinations which is used in connection with consultation chest clinics. Whenever the family history shows illness at home, copies of the folder are given to the patients for the sick ones.

The Association of Social Workers, Prague, Czechoslovakia, is planning "an exhibition of posters representing the propaganda for social service" in different countries. They say:

> It would be a great honor for us if your association would be represented by placards and posters which you may have issued, and we beg you therefore to kindly send us copies. We, of course, agree to pay all expenses regarding postage, etc., etc., or if preferred would send copies of our posters in exchange.

Please tell the editor when you mail your posters.

OFFICE SUGGESTIONS

Most posters are rolled for mailing with the printed side on the inside. The result is that usually much effort is needed to get the lower end of the poster to hang straight. If the poster were rolled with the printed side out any slight curve at the bottom would press against the wall and not be objectionable.

Some attention to the nature of the tube used in mailing posters, and probably a little extra expense for a better type of roll than is often used, would greatly lessen inconvenience for those who receive the posters. Frequently posters are slightly torn in removing them from the mailing tube, and sometimes the tube must be torn or cut off by bits to get the poster out without much injury to it. Suggestion: Have a poster or a bunch of them mailed in usual way to your home address to check whether or not the recipient has trouble with the tube you are using. Write the editor if you wish sample of an especially convenient tube.

"For a series of form letters various colors of bond paper may be used to advantage. A different color for each letter is sometimes advisable—particularly the lighter tints. Colored form letters have more attention value than plain white but they must be selected with judgment."—*Top*, Otterbein Press, Dayton, O.

POPULAR HEALTH ARTICLES

Anti-Noise Campaign. *Literary Digest*. March 31, 1928. Based on article in *The Forum*.

Give the Specialist a Chance. *Saturday Evening Post*. March 24, 1928. Editorial appreciation of the expert. Deserves wide reprinting.

Let's Be Lazy, by Ruth F. Wadsworth. *Collier's*. March 31, 1928. "Spring fever isn't so bad if you meet it on its own ground: indulge that tired feeling sensibly."

The Sun Cure and Rickets, by Josephine H. Kenyon. *Good Housekeeping*. March, 1928.

The World of the Living Dead, Five Sunday Magazine feature articles on the drug traffic. *New York World*. Fifth and last, April 1, 1928.

ANNUAL REPORTS

Next after the title page, under the heading of "Then and Now," are two *short* paragraphs sharply contrasting the activities of 1873 and 1926 in the 1926 report of Children's Health Service, New York Diet Kitchen Association, 578 Madison Ave., New York, N. Y.

Unusually effective captions appear under the photographs in the 1927 report of University Settlement, New York, N. Y. A health examination picture is labeled: "Can I Play Basketball, Doctor?" "Yes; But Your Teeth Must Be Filled and You Need More Sleep." Under the picture of a rest period of a group of undernourished children: "Playing Together, Eating Together, Resting Together—Even the Daily Nap Is a Social Event."

BIBLIOGRAPHY

Seven typewritten pages of book and periodical references to health examinations. Jan., 1924, June, 1927. Free. National Health Council, 370 Seventh Ave., New York, N. Y. They do not say so, but the Council will tell you where to get any title and the cost.

SLOGANS

Let Your Doctor Decide—National Tuberculosis Association.

Public Health Is Public Wealth—Invest—National Organization for Public Health Nursing.

LAW AND LEGISLATION

JAMES A. TOBEY, LL.B., DR. P.H.

A Plan for Federal Child Welfare Extension—The original Sheppard-Towner Law, or, more properly, the Federal Maternity and Infancy Act, was passed on November 23, 1921, to take effect for a 5-year period ending June 30, 1927. Near the end of this period, Congress was importuned to continue the operation of the act for several years and after considerable wrangling agreed to a 2-year extension, but with the understanding that the law would positively cease on June 30, 1929. Both sides agreed to this.

During the closing days of the first session of the Seventieth Congress a bill, H. R. 14070, to provide a child welfare extension service in the federal government, was introduced by Representative Newton of Minnesota. This measure authorizes an annual appropriation of $1,000,000 for the purpose of paying the expenses of a new division in the U. S. Children's Bureau. Only $50,000 would actually be used for the administration of this service, the remainder of the million dollars being allotted to the states to promote the welfare and hygiene of mothers and children and aid in the reduction of infant mortality.

This proposition differs from the Federal Maternity and Infancy Act in that the states would not be required to match the federal funds, but the state, territorial, county, and municipal agencies, or child welfare associations could make voluntary appropriations for the purpose.

An Advisory Committee on Maternal and Child Welfare would be created by this proposed law. The committee would consist of the Surgeon General of the U. S. Public Health Service, the U. S. Commissioner of Education, the Director of Extension Work of the Department of Agriculture, and the Chief of the Children's Bureau, as *ex-officio* members, and 5 other members to be appointed by the chief of the Children's Bureau, with the approval of the Secretary of Labor. These members would be from without the federal government and at least one would be required to be a state health officer.

The bill stipulates that no funds appropriated under the act could be used for buildings, lands, pensions, or gratuities, and also that no agent of the Children's Bureau could enter any house over objection of the owner.

This measure was referred to the Committee on Interstate and Foreign Commerce of the House, and will be before the second session of the Seventieth Congress when it convenes next December.

Indian Health Needs—Sanitarians have long recognized the fact that the health of the Indians is thoroughly bad compared with that of the general population. The fact has been confirmed and emphasized in an impartial report on the problem of Indian Administration which has been recently issued by the Institute for Government Research of Washington, D. C. as the result of an extensive survey made at the request of Dr. Hubert Work, Secretary of the Interior.

In this report of some 870 pages, 155 pages are devoted directly to the health of the Indians and the medical and sanitary activities of the Indian Service. Appropriations for health are stated to have been inadequate and the personnel on this work insufficient, underpaid, un-

trained, and inexperienced. In order to help remedy these conditions, it is recommended that new positions in the field of health be created at decent salaries, that 6 medical specialists be employed to aid the director of medical work, that public health clinics be established, and that a million dollars be made immediately available to improve the quantity, quality, and variety of diet available for Indian children in boarding schools.

This report, the preparation of which was directed by Lewis Meriam and the health section developed by Dr. H. R. Edwards, is a notable contribution to political science and to public health. A summary of findings and recommendations has been issued separately.

Health or Education?—The medical inspector of a township in Pennsylvania sent home several pupils who were not vaccinated against smallpox. The school board ordered them to return to school. The next thing the members of the school board knew, they had been haled into court before a justice of the peace and fined, with costs imposed. "The law must be obeyed," says *Pennsylvania's Health* in presenting this item in its issue of May-June, 1928.

Municipal Health Laws—About 150 municipal ordinances and regulations pertaining to public health, adopted between 1923 and 1926, are contained in a pamphlet compiled by William Fowler, LL. B. and recently issued by the U. S. Public Health Service (Supplement No. 68). This bureau has been publishing similar compilations since 1910, this one being the tenth in the series. It does not contain all of the health ordinances and regulations received by the Service during the 4 years, but only the more important, which are arranged by subjects, from animals to water and ice. No one subject seems to predominate in the amount of legislation.

This pamphlet will be of interest and value to sanitarians who have to consider the drafting of ordinances and regulations, but it should be borne in mind that legislative drafting is a highly technical procedure, in which the assistance of competent legal advice is desirable. Mere copying of another's work is sometimes a dangerous course.

Safety Codes—Many bureaus of the national government are interested in industrial hygiene. Among them are the U. S. Public Health Service in the Treasury Department, the Bureau of Labor Statistics, the Children s Bureau, and the Women's Bureau in the Department of Labor, the War, Navy, and Post Office Departments, and the Bureau of Mines and the Bureau of Standards in the Department of Commerce.

The Bureau of Standards has a safety section, the activities of which are described by M. G. Lloyd, its chief, in the *United States Daily* for June 16, 1928, in one of the topical surveys of the government which this newspaper is presenting. The principal function of this safety section has been the development of safety codes for the prevention of industrial accidents. These codes formulate standards which may be adopted as rules and regulations by state and municipal boards or commissions. Public accidents and safety in the household have also come in for attention from this section.

The Barbers of Chicago—Barbers were the subject of sanitary legislation as early as 1307, according to an article in *Chicago's Health* for June 12, 1928. In that year London passed an ordinance prohibiting barber surgeons from displaying blood in their windows to attract trade, and compelling them to dispose of it in the River Thames.

Surgical cleanliness is still very de-

sirable, if not essential, in the modern restricted field of the barber, in the opinion of Dr. Arnold H. Kegel, Commissioner of Health of Chicago, author of this article. He tells us that upward of 50 ordinances for the control of barber shops and similar personal service establishments have been passed by the leading municipalities of the United States during the past decade.

General cleanliness of shops and attendants, washing of hands before serving each customer, prohibition of the use of common towels and other common articles, sterilization of utensils after each use, prohibition of practice by or on diseased persons, licensing of operators, and posting of the rules, are some of the important provisions of ordinances or regulations concerned with barber shops.

These are good principles, but how ardently are they enforced? Anyone who uses a barber shop knows the answer. In Chicago each shop was inspected once a year and many violations were found. As Dr. Kegel says, however, the progressive barber realizes that compliance with such laws is to his advantage and will increase his trade.

Recent Court Decisions on Health—In Alabama a municipality installed a sanitary toilet on private property where the owner had failed to obey an ordinance requiring such installation. Although the city failed to comply with the statutory requirements for getting a lien on the property, the State Supreme Court held the owner liable for the expense on a contract action. Town of Leeds v. Cason, 116 So. 519.

In Illinois it has been held that a registrar of vital statistics cannot refuse to accept and file a valid birth certificate, because the registrar's duties are purely ministerial. People v. Heckard, 244 Ill. App. 112.

Lapse of time does not establish a right to maintain a public nuisance, in this case the pollution of a water course, according to a Texas decision. City of Corsicana v. King, 3 S. W. (2d) 857.

An employe injured by an occupational disease, in this instance benzol poisoning, cannot recover under the workmen's compensation act of the State of Washington. Seattle Can Co. v. Dept. of Labor and Industries, 265 Pac. 739. In Minnesota, on the other hand, chemical poisoning of a physician's assistant while eating his lunch near the office in order to be able to answer telephone calls was an injury under the workmen's compensation act of that state. Krause v. Swartwood, 218 N. W. 555.

A city garbage ordinance has been upheld in California. Ex parte Santos, 264 Pac. 281.

Tuberculosis Legislation—A comprehensive manual of tuberculosis legislation has recently been published by the National Tuberculosis Association of New York. This manual is designed for sanitarians, attorneys, legislators, and others who are interested in drafting or altering state laws and regulations on tuberculosis. It gives an outline of a state legislative program against this disease and analyzes and discusses every item in detail. There are also a general consideration of tuberculosis and the law, with notes on law making, and an index to all the existing state laws on tuberculosis. Copies of this manual may be obtained at a cost of 50 cents through the book service of the A.P.H.A.

Miscellaneous Items—Standards for clinical thermometers have been fixed by the Commercial Standards Unit of the U. S. Bureau of Standards and will become effective on October 1, 1928.

Cartons for packing butter are favored by health officials, according to the U. S. Department of Agriculture, which has recently conducted a survey of this subject in 117 cities.

North Carolina has the most counties free from bovine tuberculosis, according to the Department of Agriculture. In the United States, 487 counties have no cattle with tuberculosis, and 91 of these counties are in North Carolina.

"Insanity and the Law" is the title of an interesting reprint from the *Annals of the American Academy of Political and Social Science* (Mar., 1928). The authors are D. J. McCarthy, M.D. and Le Roy M. A. Maeder, M.D., LL.B.

CONFERENCES

August 6-10, American Hospital Association, San Francisco, Calif.

August 6-10, American Occupational Therapy Association, San Francisco, Calif.

September 10-15, American Chemical Society, Swampscott, Mass.

September 12-14, Southern Conference of Tuberculosis Secretaries, Biloxi, Miss.

September 17-19, Mississippi Valley Conference on Tuberculosis, Des Moines, Ia.

September 18-21, New England Water Works Association, Montreal, Can.

September 24, 25, 26, New England Health Institute, Burlington, Vt.

September 25, 26, Annual Conference of Indiana State Health Officers, Gary, Ind.

September 25, 28, American Roentgen Society, Kansas City, Mo.

October 4-6, Association of Military Surgeons of the United States, Baltimore, Md.

October 11-13, Fall Regional Social Hygiene Conference, Louisville, Ky.

October 11-13, Canadian Public Health Association, Winnipeg, Can.

October 11-13, International Association of Dairy and Milk Inspectors, Chicago, Ill.

October 15-19, American Child Health Association, Chicago, Ill.

October 15-19, American Social Hygiene Association, Chicago, Ill.

October 15-19, State Health Officers of Illinois, Chicago, Ill.

October 15-19, American Public Health Association, Chicago, Ill.

FOREIGN

September 25-27, Sixth International Conference on Tuberculosis, Rome, Italy.

October 29-November 1, Second International Conference on Light and Heat in Medicine, Surgery and Public Health, London, England.

December 28, International Congress of Tropical Medicine and Hygiene, Cairo, Egypt.

BOOKS AND REPORTS

Health Essentials—*By J. Mace Andress, Ph.D., A. K. Aldinger, M.D., and I. H. Goldberger, M.D. Boston: Ginn,* 1928. 481 pp. Price, $1.72.

The authors consider the high schools as potent agencies in shaping public opinion and determining the progress of the nation. They hold that only a small percentage of high school students will go on to institutions of higher learning, while the large majority will end their formal education either before or at the time of graduation. The book is, therefore, designed especially for this class of students. Personal hygiene is placed first, with home hygiene as the second objective, and community hygiene the third; and since those in the high schools are facing the problem of choosing their life work, industrial hygiene is given due consideration, especially in regard to the health advantages or hazards involved.

The titles of the chapters have been selected with the object of being attractive. Health is held out as the foundation upon which success and happiness depend and not merely as an object in itself. Emphasis is laid on the prevention of disease and the building up of a virile personality. Introspection is to be avoided.

These ideas, taken largely from the preface, have in our judgment been successfully carried out. The text is enlivened by the life stories of prominent people, some of whom have succeeded in converting a childhood marked by ill health into an adult life of abounding vigor. Every chapter ends with questions for informal discussion in class and at home.

We have failed to find any topic undiscussed which boys and girls of the age indicated should understand, and the information given is not only sound but clearly put. The illustrations are plentiful, good, and up-to-date.

Only a few points calling for criticism have come to our attention. The vitamin table, page 136, dates back to 1921, though much more recent tables are available. On page 139, under the heading "Food Poisoning," botulism only is considered. The discussion of infected foods in Chapter XX, to which we are referred for further information, is incomplete, and contains some statements which are erroneous, as for example, that Walter Reed discovered the "cause" of yellow fever, and Pasteur "a treatment for rabies." This latter mistake is already too common and should not be taught in schools. Harvey published his discovery of the circulation of the blood in 1619, and it is described in his notes dated 1615.

On the whole the book is well written and its make-up excellent. It can be safely recommended as a text for the class of students for whom it is designed.

M. P. RAVENEL

Industrial Nursing—(*Reissue*) *By Florence Swift Wright, R.N. New York: Macmillan,* 1928. 179 pp. Price, $1.50.

To the nurse in an industrial position we recommend this reprint of Florence S. Wright's book because of the completeness of her understanding of the worker, the managing personnel and the employer; also because her views are applicable today—after ten years—and probably will be equally so for the next decade.

The nurse who has all the necessary credentials of preparation and person-

ality will find it a spiritual tonic in her daily work. The chapters on "Qualifications and Training," "Elementary Principles" and "The Day's Work" are but examples of the author's wisdom.

It is well for us that the nurses who led the way in industry were the wise, conscientious and constructive women they proved to be. Much credit is due this great pioneer for the keenness of her vision, as whenever and wherever industrial nurses look for the latest information to enable them to do justice to their jobs, no better source is yet available.

The bibliography included in the volume is good and can be brought up to date through the agencies mentioned therein. M. T. DOWLING

Filterable Viruses—*Edited by Thomas M. Rivers. Baltimore: Williams & Wilkins,* 1928. 428 pp. Price, $7.50.

Discovered first in 1892, the filterable viruses were considered interesting and important, though comparatively little attention was paid to them for several years. It has been found that they are responsible for more than 100 diseases of plants, thereby seriously menacing our future food supply, and also that many diseases of animals and men are caused by them. The present volume is an attempt to bring up to date our knowledge concerning these important and troublesome organisms.

The book is made up of ten chapters written by as many authors, and shows the faults so often seen in compilations of its kind, since there is repetition and unevenness in presentation. Some of the chapters are practically reproductions of material already published in the same form, and there is very little in the book which has not already been published in one or more journals. It is, however, convenient to have this material collected in one volume. The second chapter on "Filters and Filtration" is most scholarly and complete. The question concerning the stage at which organisms are filterable is not discussed, although it is one of the most important features of the entire problem. It receives bare mention on page 22. Each chapter is well documented, and ends with a good bibliography. For the research worker this constitutes the chief value of the book.

The printing is good, but the illustrations are only fair. There are few errors, though some of these are quite misleading, as on page 13, in the reference to the *Journal of the American Medical Association*. The jacket describes it as "The first systematic study of filterable viruses in English." It seems to us to be largely a survey of known facts and theoretical deductions.

M. P. RAVENEL

Cancer, a Professional Responsibility and a Public Liability—*By Albert Soiland, M.D., F.A.C.P. New York: Appleton,* 1928. 143 pp. Price, $1.50.

In this little book, Dr. Soiland has undertaken a task which is of no small order. Cancer is rapidly becoming one of the greatest killers in modern civilization. There is no attempt on the part of the author to show that the medical profession has been lax in its efforts against this disease, but one cannot but feel that there has been an attitude of indifference on the part of the public. No progress is made without a corresponding advance in education. Such a book, read by the average citizen, will undoubtedly advance lay knowledge with regard to this scourge of our age. With but two or three exceptions, the book is free from technical terms and phrases, and is very readable. It should prove of interest to the lay public, for whom it is written. Dr. Soiland's efforts to steer the lay reader clear of the rocks of so-called "cancer cures" is worthy of note, and he sounds a clarion call for physical examinations of the individual

who thinks he is free from disease. This will possibly help to a greater degree than we imagine, to eradicate cancer from the earth. It will also allay the fears of many people for whom the disease of cancer has such a dread.

We would highly recommend the book to anyone interested in the subject, both for private information and also as a basis for material for popular lectures.

WALLACE CRAWFORD

La Vaccination Préventive Contre la Tuberculose par le "BCG"—*By A. Calmette, Sous-Directeur de l'Institut Pasteur, Avec la Collaboration de C. Guérin, A. Boquet et L. Nègre. Paris: Masson et cie,* 1927. 233 pp. Price, 22 Fr.

All bacteriologists, and especially those interested in immunization against tuberculosis, have followed carefully the work of Calmette and his associates, which began in 1903. The publications have appeared in various journals, though chiefly in the *Annales de l'Institut Pasteur*. It is a matter of great convenience to have all of this material now collected into one volume.

The book is divided into four parts, the first of which gives a good review of the attempts at vaccination from the time of the discovery of the tubercle bacillus. It is a matter of congratulation that American work is clearly recognized, and that Trudeau is given credit for his pioneer contributions.

The second part is devoted to the experimental studies on animals with the Calmette-Guérin vaccine, now universally known as "BCG." This section includes also the experiments of Wilbert on the vaccination of apes in the tropics.

The third part gives the history of BCG, its modification by growth on bile, begun in 1906, and its present preparation for use. The synthetic medium of Sauton is described. Biochemical, physiological, and histological studies are also included, the latter illustrated by plates made from microphotographs.

The fourth part is in some ways the most interesting, as it treats of vaccination of infants since 1921, and the results obtained. At the end of this section the forms used in connection with the statistical studies are reproduced.

The whole constitutes the record of a monumental piece of work, which has occupied a quarter of a century, and which has commanded the respect and attention of all scientific men. While the results obtained by the author and his coworkers have not been duplicated in other countries, and some criticism has been made of his controls, his work must always stand foremost in this line of endeavor. Concerning, as it does, the control of one of the chief scourges of mankind, the book should be read by physicians as well as bacteriologists.

The printing is excellent, and needless to say, it is written in the clear style characteristic of its senior author.

M. P. RAVENEL

Modern Aspects of the Diagnosis, Classification, and Treatment of Tuberculosis—*By J. A. Myers, with Introduction by David A. Stewart. Baltimore: Williams & Wilkins,* 1927. 271 pp. Price, $5.50.

The purpose of this volume is to present the facts regarding tuberculosis in a simple manner "in the hope that it will stimulate among students and physicians a new interest in the study of this disease," serving both as an inspiration and as a source of real knowledge. The author has achieved his goal in this book for it is a very concise account of tuberculosis in all of its aspects.

The subject is divided into three parts: general consideration; diagnosis and classification; healing, prognosis and prevention. The book is certainly not written in too great detail, in fact the major criticism which the reviewer has to offer is that there appears to be a

lack of sufficient discussion of certain major topics. The section of the book devoted to a discussion of air is certainly too brief and somewhat unbalanced. Data are presented bearing on the question of air temperature and physical output, environmental temperature and body temperature, but the very important part played by moving air in stimulating the body is dismissed with the statement: "It is the variations in our atmospheric bath rather than our air inhalations which count most heavily in the promotion of health or in the treatment of disease." The author has been so brief on this point that he hardly justifies the use of open air in the treatment of tuberculosis from the scientific standpoint.

The part played by dust in the causation of industrial tuberculosis receives but scant attention and on this point the author's statement: "Probably the greatest danger from inorganic dust in relation to tuberculosis is that the particles are capable of carrying infection into the body," is, to say the least, not accepted by many workers engaged in the study of this portion of the tuberculosis problem. LEONARD GREENBURG

A Text-Book of Infectious Diseases —*Being the Third Edition of Goodall and Washbourn's Manual of Infectious Diseases—Revised and in large part re-written by E. W. Goodall, O.B. E., M.D., B.S. London. 26 plates (6 col.), 15 diagrams and 34 charts. New York: Wood,* 1928. 718 pp. Price, $10.00.

Nineteen years have passed since the second edition of this book, prepared by the present author, owing to the death of Dr. Washbourn, whose name is still retained as a conjoint author.

In the meantime our knowledge has advanced along many lines. Certain diseases which were practically unknown have come into prominence, such as epidemic poliomyelitis and encephalitis lethargica, to each of which a chapter has been devoted. Against this, other diseases have disappeared from England, so the chapter on bubonic plague has been omitted.

Attention is called to the revival of the so-called epidemic constitution as a factor in the causation of epidemic diseases. A number of pages are devoted to its consideration and to the various meanings which have been given. The author defines it as "that combination of the many factors which bring about and keep up an epidemic."

The introduction of 51 pages is intended particularly for students preparing for the D. P. H. degree. Several chapters on general subjects such as Fever, Contagion and Infection, and Disinfection follow, after which the contagious diseases are taken up in order. There are six appendices, one giving the English laws concerning biological preparations, the examination of the spinal fluid, and the last is a table giving periods of incubation, day of eruption, time of isolation, quarantine, etc.

It is hard to select any one chapter for especial praise. The entire book is one of those which is a delight to the reviewer, not only in its material, but in its manner of presentation.

The author's wide experience insures consideration of his opinions even when they are contrary to widely accepted ideas, as on pages 219 and 220, concerning the control of diphtheria. Although the author is not a bacteriologist, and confesses to the difficulty of properly evaluating the conflicting statements made by bacteriologists, his discussions of bacteriological matters are marked by sanity and good judgment.

The material is thoroughly up to date and there is little to criticise, though a few points are found on which the author does not give the most recent knowledge, as on page 679, where he refers only to the anthrax serum of Sclavo. He does not mention the great improvement in

this serum made in the United States or its increased use, owing to the great number of cases during and following the World War.

The illustrations are of unusual excellence, and for the young diagnostician we can especially commend the diagrams giving the distribution of the eruptions over the body, both front and back.

The book will make a valuable addition to any library, but can be especially recommended to health officers, and others whose work brings them into contact with the infectious diseases. The printing and make-up are excellent.

M. P. RAVENEL

A Textbook of Bacteriology and Its Applications—*By Curtiss M. Hilliard. Boston: Ginn,* 1928. 392 pp. Price, $2.80.

This is an introduction to bacteriology written primarily for the student in household economics, and meets a long-felt need in this respect.

Professor Hilliard has made a wise selection of material based upon a long and successful teaching experience. The microscopic world is introduced to the student, first, by a brief but comprehensive historical review, then a concise description and classification of the most important microörganisms, and finally, an interpretation of microbic activity in relation to human welfare.

There are a number of useful formulae and outlines included, such as a key to the common molds, Bergey's classification of bacteria, and a chapter on the methods for the study of bacteria, arranged by Pauline Hitchcock Foster, which follow closely the *Methods for Pure Culture Study of Bacteria* recommended by the Society of American Bacteriologists. The *Standard Methods of Milk Analysis* and the *Standard Methods of Water Analysis* published by the American Public Health Association are conveniently appended for laboratory practice.

As Dr. Samuel C. Prescott says in the introduction, "the production of a useful textbook for students is no mere matter of a compilation of a mass of data, but requires careful selection, accuracy of statement, balance, and a digestion of the material to be presented so that it may readily become a part of the professional working capital of the student." The reviewer thinks that Professor Hilliard has produced such a book and has made it so interesting that it will appeal to all intelligent readers who desire a better knowledge of the activity of bacteria as a factor in the daily routine of life, as well as furnish a text for the student of biology.

C. C. YOUNG

Eat, Drink and be Healthy—*An Outline of Rational Dietetics. By Clarence W. Lieb, M.A., M.D. New York: The John Day Company,* 1928. 180 pp. Price, $1.50.

The object of this book as stated by the author ". . . is to crystallize the present-day knowledge of nutrition into such form that he who runs may read." He recognizes that there are many good books on nutrition, but they are either too technical on the one hand, or dominated by some fad on the other. In carrying out his object he has, for the sake of brevity, "run the risk of scientific inaccuracy." He has succeeded in giving us a book which is easy to read and discusses almost every food about which the average person will seek information. There are lists of foods arranged according to their chief characteristics and uses, taken largely from two well-known books. There are also numerous recipes for the preparation of special foods, like liver, and model menus designed to accomplish certain purposes.

Various food fads are handled without gloves. The author states his opinions, in which there is always a foundation of truth, in such dogmatic fashion as to

mislead the uninformed. He says for example: "Sugar is undermining the nation's health." He condemns the great popularity of spinach, largely on account of the oxalic acid it contains, but partly for its high residue, and would add a Twentieth Amendment to the Federal Constitution prohibiting its use. On the next page he praises "lettuce as the greatest vegetable food given to humanity," though it is mentioned in several other places as being a high residue food. He makes no distinction between the colored lettuce and the bleached in regard to vitamin content.

On the whole, the book can be commended to laymen who do not care to go deeply into the subject. The printing and makeup are excellent and only a few mistakes have been detected. On page 12, the name of Dr. Graham Lusk is misspelled. Many chapters end with useful and appropriate axioms.

M. P. RAVENEL

Michigan Handbook of Hospital Law—*By Dorothy Ketcham. Dearborn: Michigan Hospital Association,* 1928. 237 pp. Price, $2.00.

Physicians, sanitarians, and hospital executives in Michigan ought to find this little handbook indispensable. It should also serve as a guidebook for the preparation of similar reference books in other states.

This handbook summarizes the legal requirements affecting hospitals in Michigan. It has a convenient alphabetical arrangement of subjects, with numerous annotations to legislation, court decisions, and works of reference. The appendices contain a directory of hospitals and sanatoriums in the state, a list of agencies interested in hospitals, the state medical practice act, a bibliography (which is none too modern in some respects), a table of cases and much other useful information. There is a good index, and the book is well printed.

The idea is excellent and it is, in general, well executed. This handbook is worth emulation elsewhere.

JAMES A. TOBEY

Personal Hygiene Applied (*3d ed.*)—*By Jesse Feiring Williams, M.D., Teachers College, Columbia University. Philadelphia: Saunders,* 1928. 458 pp. $2.00 net.

This new edition of a well-known book is welcome. The first edition appeared 6 years ago. A book which has gone through 3 editions with 12 printings has made its place. The new edition brings the material up to date, with an increase of about 40 pages. A number of new illustrations have been inserted.

Not only the text, but the makeup of the book is up to the standard which was set by former editions. The reviewer continues to believe that it is the best book in its field.

M. P. RAVENEL

Group Clinics. A Study of Organized Medical Practice—*By Walter C. Klotz, M.D. New York.* 1927. 32 pp.

Health Services in Clinics—*By Anna Mann Richardson, M.D. New York.* 1927. 83 pp.

These two pamphlets are published by the Committee on Dispensary Development of the United Hospital Fund of New York.

Dr. Klotz takes up the origin of group clinics, and analyzes a few clinics as to their development and organization, physical construction and equipment, routine, services rendered, scope of practice, financial regulation and affiliations with hospitals and social service agencies.

In Dr. Richardson's pamphlet a brief résumé of the services rendered to children and adults at the several New York City health centers is given. This pamphlet can be of invaluable aid to the medical director and social service worker interested in obtaining information about practical procedure in successful health centers.

HEALTH DEPARTMENT AND OTHER REPORTS

IRA V. HISCOCK

New Jersey—Bound in cloth covers, printed in good readable type, and containing both a table of contents at the front and an index at the back, this 50th annual report of 277 pages for the year ending June 30, 1927, records several advances in public health work. A state-wide movement to increase diphtheria immunizations was undertaken; a method for direct microscopic examination of milk for practical field use was developed; the continuous child hygiene program under state supervision was adopted by several new communities; the venereal disease control program was extended; and a successful school for employed health workers was conducted jointly by the state university and the Department of Health.

The outstanding accomplishment pertaining to milk control was the enactment of Chapter 233 of the laws of 1927 providing that no person shall purchase, distribute or sell for human consumption, any milk or cream which has not been pasteurized, excepting that produced by cows which have successfully passed a tuberculin test given the year of the sale of such milk or cream.

The child hygiene demonstrations are carried on by nurses in the various communities, usually for one year. At the end of the period, the community is asked to take over the salary of the nurse. There are 90 nurses under state supervision, 73 of whom are paid by the municipalities, 9 by the state, and the remainder out of state and municipal funds. The examination of preschool children to detect remedial defects before the child enters school has been emphasized in the baby-keep-well stations.

Work has been conducted in continuation schools in 3 districts. The girls are taught the principles of child hygiene and health prevention and the nurses have been able to secure corrections of defects discovered among the girls themselves following physical examinations. During the year, the teaching of preventive measures to the student teachers in the normal schools has been extended so that all 5 schools are now covered.

The estimated population for 1926 was 3,570,159. A birth rate of 20.27, a death rate of 12.4, and an infant mortality rate of 70.3 (122.1 for colored) are recorded. Important statistical data are tabulated for long periods beginning with 1879, and several good charts add interest to the report.

Otero County, Colo.—A mimeographed report for 1927 shows that this county of 26,513 persons, 6,711 of whom were school children, had the benefit of full-time health service at a reasonable cost. There are 6 incorporated towns in the irrigated district, comprising 79,615 acres, the remaining area being utilized as dry farming and grazing land. During the year there were 570 births and 355 deaths, the chief causes of death being heart disease (57), pneumonia (38), gastroenteritis (32), premature births (31), cancer (28), and tuberculosis (25). During 1926 and 1927, 2,847 complete toxin-antitoxin immunizations were given, and it is noteworthy that last year there were only 2 diphtheria cases and 1 death reported. During the 2-year period, 1,791 smallpox vaccinations and 780 typhoid vaccinations were performed.

Macon City and Bibb County, Ga.—The 1927 report of the joint city and county board of health is well printed, contains a classified financial statement showing an expenditure of $42,000 for

a population of 82,299 (37,188 colored), several good charts and statistical tables. Of unusual interest is the progress in sewer extensions reported. Following 37 deaths from diarrhea and enteritis, the attention of the mayor and council was directed to several congested districts affected. These were surveyed, with the result that increased appropriations were made to place sewer connections within reach of several hundred houses, the remaining districts being provided with sanitary pit privies (1,339).

Typhoid fever cases numbered 28 in 1927 as compared with 104 the previous year. Infant mortality dropped from 119.1 to 89.4, while the general death rate decreased from 16.6 per 1,000 population to 13.4. The Health Officer's report concludes with recommendations for further extension of health services along modern lines.

Rockford, Ill.—Special features of this 1927 report include an organization chart showing essential health activities, a unique chart showing office arrangements in the department, a financial statement, good statistical graphs and tables. "The extensive use of charts, maps, and diagrams has continued to be of especial value also as executed by each bureau, and has assisted in bringing the message of health to the public at times of conventions, exhibits, and addresses before clubs and parent-teacher associations."

It is noteworthy that 98.5 per cent of the milk supply in this city of 81,800 population, is pasteurized. Over 76 per cent of the births in 1927 occurred in 3 local hospitals. An infant mortality rate of 62.35 (50.96 resident), a general death rate of 9.97 (8.59 corrected for residence), and a resident birth rate of 16.66 are reported.

Pennsylvania Dairy and Milk Inspectors—Milk inspectors and health officers will find the 4th annual report of the Pennsylvania Association (211 pages) of considerable interest. Formal addresses and committee reports cover a wide range of study and observation, including programs, legislation, education, laboratory and field investigations, and results. Increasing emphasis is being given to the importance of milk control in small communities, to the value of laboratory as well as field supervision, and to the importance of pasteurization, scientifically controlled. A few colleges have developed practical summer courses for training milk inspectors and laboratory workers.

Missouri Public Health Association—A mimeographed copy of the proceedings of the 3rd annual meeting of this state association held in coöperation with the State Board of Health and the International Health Board, contains the instructive papers presented at the 4-day session. The topics include epidemiology, laboratory procedures, tuberculosis and venereal disease control, rabies, mental hygiene, nursing, record keeping, publicity, child hygiene, public safety, sanitation, and community organization.

Cuyahoga Falls, O.—This city of 14,400 population covers an area of 9 square miles and has 72.48 miles of sanitary sewers and 74.35 miles of water mains. The school enrollment totals 3,421. A birth rate of 16.6, a death rate of 8.7, a tuberculosis death rate of 34.7 (per 100,000), and an infant mortality rate of 41.8 are recorded. The average age at death was 52 years in 1927. The report lists population and mortality figures of interest for 17 Ohio cities of similar population to that of this city. There were 9,701 nursing visits made during the year, of which 1,547 were to school children and 823 to tuberculosis patients. Scarlet fever was the outstanding disease of the year, with 104 cases and 1 death. Weekly laboratory anal-

yses are made of the milk and water supplies, the average bacteria count of the milk for the year being 20,400.

Kenmore, O.—Kenmore covers approximately 5 square miles and has a population of 20,467, with a school enrollment of 4,161. A birth rate of 18.1, a death rate of 4.6, a tuberculosis rate of 30.9 (per 100,000), and an infant mortality rate of 48.6 are recorded. There were no deaths from diphtheria, measles or scarlet fever, and but 1 death (30 cases), from whooping cough during the year. Nursing visits totaled 12,531—2,187 being to school children, and 1,998 to tuberculosis patients. "The physicians have materially assisted the Department of Health in the control of communicable diseases, and the board of health wishes to extend to the physicians of Kenmore their appreciation for this coöperation, as well as their prompt and complete reporting of the communicable diseases."

Mount McGregor Sanatorium—During the year 1927, 467 patients were admitted to this sanatorium of the Metropolitan Life Insurance Company, from the United States and Canada, and 430 were discharged. Of those admitted, 200 were tuberculous. A classification of types of cases admitted shows that 6.5 per cent were suspects, 38.5 per cent in the incipient stage, 34 per cent moderately advanced, 19.5 per cent far advanced, and 1.5 per cent non-pulmonary. The results of treatment in the discharged cases for the year show that 15 per cent were arrested, 68 per cent quiescent and improved, 10 per cent unimproved, and 7 per cent dead. The report contains other statistical data of considerable interest from the standpoint of diagnosis and treatment.

Pontiac, Mich.—The 4th annual report of the manager of Pontiac shows that approximately 10.5 square miles of area were annexed to the city in 1927, more than doubling the area and increasing the population by 4,655. The Public Health Department report shows a general death rate of 9.6, a birth rate of 24.5, and an infant mortality rate of 62.6. Of the total births, 32.4 per cent occurred in hospitals.

During the year, 4,672 toxin-antitoxin treatments and 1,176 Schick tests were given by the medical division of the public schools and the health department. Nursing visits to prenatal cases numbered 484, to infants 3,220, to preschool children 7,649, and inspections of baby boarding houses 66, in addition to other work. Of the total milk supply, 95 per cent is pasteurized.

BOOKS RECEIVED

CHILDBIRTH. An Outline of Its Essential Features and the Art of Its Management. By Wm. G. Lee. Chicago: University of Chicago Press, 1928. 300 pp. Price, $3.00.

PHYSIOLOGY AND BIOCHEMISTRY OF BACTERIA. Vol. I. By R. E. Buchanan, Ph. D. and Ellis I. Fulmer, Ph. D. Baltimore: Williams and Wilkins, 1928. 516 pp. Price, $7.50.

PUBLICITY FOR SOCIAL WORK. By Mary Swain Routzahn and Evart G. Routzahn. New York: Russell Sage Foundation, 1928. 392 pp. Price, $3.00.

THE PROBLEM OF INDIAN ADMINISTRATION. Report of survey made at request of Hon. Hubert Work, Secretary of the Interior, Washington: Institute for Government Research, 1928. 872 pp. $5.00.

NURSES, PATIENTS AND POCKETBOOKS. Report of a Study of the Economics of Nursing Conducted by the Committee on the Grading of Nursing Schools. By May Ayres Burgess, Director. New York: Committee on the Grading of Nursing Schools, 1928. 618 pp. Price, $2.00.

NUTRITION. Walter H. Eddy. Baltimore: Williams & Wilkins, 1928. 237 pp. Price $2.50.

PERSONAL HYGIENE APPLIED (3rd ed. reset). Jesse Feiring Williams. Philadelphia: Saunders, 1928. 458 pp. Price, $2.00.

EAT, DRINK AND BE HEALTHY. An Outline of Rational Dietetics. By Clarence W. Lieb. New York: John Day, 1928. 180 pp. Price, $1.50.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Light Therapy in Clinics—British health authorities are urged to include artificial sunlight therapy in child hygiene clinics for rickets, skin diseases, and non-pulmonary tuberculosis.

BANKS, H. S. Artificial Sunlight Treatment in Public Health Work. Pub. Health, 41:9 (June), 1928.

Cancer Control—The author objects to "cancer week as in America" and suggests instead a sustained educational program. Being British, he does not know that doing things by weeks is our besetting national vice.

BELL, W. B. The Prevention of Cancer. J. State Med., 36:6 (June), 1928.

Dental Caries in Childhood—The importance of mineral salts in preventing dental caries in children is indicated by the recorded experience with diabetic children in which a diet rich in salts arrested the caries. An important contribution for hygienists.

BOYD, J. D., and DRAIN, C. L. The Arrest of Dental Caries in Childhood. J. A. M. A., 23:23 (June 9), 1928.

College Student Hygiene — Self supporting students made more frequent dispensary visits and spent more time in the infirmary than did independent students at Oberlin University.

BRADSHAW, R. W. Health of the Self Supporting College Student. J. A. M. A., 90:22 (June 2), 1928.

The Science of Epidemiology—This paper is a discussion of the history and practice of epidemiology addressed to the educated laity. Very well done; useful as an example for others who write.

CHAPIN, C. V. The Science of Epidemic Diseases. Scient. Monthly (June), 1928.

Electrophoresis of Diphtheria Bacilli—This is a series of papers discussing and describing the method of determining virulence by electrical reactions. The authors report the method to be simple and, in general, to give reliable results as checked against guinea pigs.

FALK, I. S., et al. Electrophoresis of Diphtheria Bacilli. J. Bact., 15:6 (June), 1928.

Sex Education—The moral, social, and biologic aspects of sex are dealt with fearlessly in this stimulating paper. The author concludes that we could be rid of the venereal diseases in a single generation by utilizing fully all the means of education at our command.

HILL, T. W. Sex Education as a Public Health Problem. Med. Off., 39:20 (May 19), 1928.

Rheumatism Control—A hopeful summary of the problem, emphasizing the importance of personal hygiene and environmental conditions in childhood.

NEWMAN, G. The Control of Rheumatism. Med. Off., 39:20 (May 19), 1928.

Antirachitic Factor in Human Milk—Human milk contains no antirachitic factor for rats, whereas cow's milk does possess rickets-healing substance. This phenomenon is not due to a higher percentage of calcium and phosphorus in the latter.

OUTHOUSE, J., et al. Human Milk Studies. J. Biol. Chem., 78:1 (June), 1928.

Rabies Prophylaxis — An article emphasizing the importance of cauterizing dog bites with fuming nitric acid and the advantages of the Semple prophylactic injections.

ROSENAU, M. J. Rabies. Northeast J. Med., 198:15 (May 31), 1928.

Diphtheria Immunization Procedures—Directions for using the Schick test outfits and toxin-antitoxin mixture supplied by the Massachusetts health department.

SCAMMAN, C. L. Active Immunization against Diphtheria. Northeast J. Med., 198:16 (June 7), 1928.

Brucella Abortus Infections—This paper is a report of seven cases of *B. abortus* infection in man and describes the widely varied clinical symptoms observed. It confirms earlier reports of such infections.

SENSENICK, R. L., and GIORDANO, A. S. Brucella Abortus Infection in Man. J. A. M. A., 90:22 (June 2), 1928.

Etiology of Rheumatic Fever—The author offers *streptococcus cardio-arthritidis*, a new species with distinguishing cultural and serologic characteristics, as the cause of the condition. Antisera are found to have therapeutic value, and the antigen prepared from the organisms stimulates active immunity.

SMALL, J. C. Rheumatic Fever. Am. J. Med. Sci., 175:5 (May), 1928.

Spray Painting Hazards—This summary of two studies of spray painting emphasizes the danger of benzol poisoning when this solvent is used; the use of benzol substitutes; the periodic examination of sprayers. The lead and silicosis hazards in spraying vitreous enamels is also covered.

SMYTH, H. F., and SMYTH, H. F., Jr. Spray Painting Hazards as Determined by the Pennsylvania and the National Safety Council Surveys. J. Indust. Hyg., 10:6 (June), 1928.

Serum Sensitization—Serum reactions occurred almost as frequently among persons who had previously never received horse serum as among those who had. In a small series of cases it was found that toxin-antitoxin did not sensitize the patient. That such sensitization occurs is doubted by the author.

SPICER, S. The Effect of Previous Administration of Antitoxin and Toxin-Antitoxin on Serum Reaction. J. A. M. A., 90:22 (June 2), 1928.

Educational Standards for Sanitarians—In a few of the closing paragraphs of his inaugural address, the president of the A. M. A. appeals for an adequately trained public health personnel.

THAYER, W. S. Inaugural Address as President of the A. M. A., J. A. M. A., 90:24 (June 16), 1928.

Bathing Beach Pollution—A bacteriologic study of the waters at public bathing beaches about New Haven Harbor showed that the water was so polluted with New Haven sewage that the beaches were unfit for bathing. Similar studies might well be made of similar conditions near other large cities.

WINSLOW, C.-E. A., and MOXON, D. Bacterial Pollution of Bathing Beach Waters in New Haven Harbor. Am. J. Hyg., 8:3 (May), 1928.

NEWS FROM THE FIELD

DR. FORGE FULL-TIME COUNTY HEALTH OFFICER

DR. F. W. Forge has been appointed full-time Health Officer of Charves County, N. M. Pending the appointment of Dr. Forge, the health work in the county was directed by Dr. W. W. Phillips who was carrying on this public work along with his private practice, but found it an overburdening task to do both pieces of work.

HERMAN N. BIGGS MEMORIAL FUND

THE Herman N. Biggs Memorial Fund recently gave $55,000 to New York University and Bellevue Medical College to establish a Herman N. Biggs professorship in preventive medicine.

OHIO PUBLIC HEALTH ASSOCIATION HEALTH COURSE

DR. R. G. Paterson, executive secretary of the Ohio Public Health Association will conduct a course in public health in connection with the Ohio Welfare Conference in Columbus, O., October 8-10, headquarters at the Deshler-Wallick Hotel.

Ten study courses are to be given at the conference, and each course will consist of 5 sessions. Assisting Dr. Paterson will be C. L. Brownell of Ohio State Department of Education; Howard W. Green, Cleveland Health Council; and Bleeker Marquette, Cincinnati Public Health Federation.

OHIO TUBERCULOSIS SOCIETY CHANGES NAME

THE Ohio Society for the Prevention and Cure of Tuberculosis has changed its name to the Ohio Public Health Association and will extend its activities to include other phases of public health work. Committees are to be established to deal with tuberculosis, public health nursing, hospitals, clinics, social hygiene, better milk, child hygiene, heart disease, industrial hygiene, cancer, mental hygiene, mouth hygiene, and periodic physical examinations. The 27th Annual Meeting of the Ohio Public Health Association was held recently when the plan of reorganization was submitted by Dr. Robert H. Bishop, Jr., president.

DR.P.H. FROM FOREIGN COUNTRIES

RECIPIENTS of the degree of doctor of public health and the certificate in public health given by Johns Hopkins University at its 1928 commencement included candidates from Spain, Turkey, Jamaica, Hungary, Japan, China, Columbia, India, Czechoslovakia, Bulgaria, Jugo-Slavia, Mexico, Chili, Germany and Honduras.

An anonymous gift of $1,000,000 was made to the university and a gift of $500,000 was made to complete the endowment of the William H. Welch Medical Library. A gift of $100,000 was also made to the Wilmer Eye Clinic.

HOLLAND INSTITUTE OF THERMOLOGY

TO teach the American home-owners in a practical way the science of heating and ventilating their homes in relation to health, the Holland Institute of Thermology has been established. The institute has been created by A. H. Landwehr, president of the Holland Furnace Company of Holland, Mich. It is the hope of the promoter of the institute to make a contribution to health conditions by perfecting ventilation in the home. A research engineer will direct the tests and investigations which will be made public from time to time.

The investigations will attempt to determine how many diseases result from the improper or inadequate humidify-

ing of homes; how the seasonal occurrence of certain respiratory diseases can be modified or reduced by control of the humidity, temperature and circulation of the air in dwellings; the national economic loss due to soot and the methods available to prevent it. There will be fuel studies as related to the national fuel reserves; a medical analysis of conditioning the air so that atmosphere in the home will contribute to the health, efficiency and comfort of the family; a test for the number of air changes required in each room every hour to keep the atmosphere healthy and free from noxious germs; studies of methods of sterilizing air to minimize the circulation of disease-ridden air homes, and to ascertain the heating costs of the average home-owner.

JOHNS HOPKINS COURSE FOR PUBLIC HEALTH OFFICERS

A COURSE for the additional training of physicians who are engaged or who plan to become engaged in public health work will be given at Johns Hopkins University during the spring trimester, March 11-June 1, 1929. The course will be offered if not less than 10 students register for it by February 11, 1929. Candidates eligible to take the course must be graduates in medicine or have had other special training specified in the requirements. At the conclusion of the course a certificate of attendance will be awarded.

MATERNITY WELFARE IN LATIN AMERICA

AMONG the resolutions passed by the committee on social problems and hygiene of the Sixth International American Conference held in Habana from January 16 to February 22, 1928, was one recommending that every American country should have a corps of visiting public health nurses.

Another resolution recommended the enactment of laws providing for compulsory vacations for expectant mothers, whether in public or in private service, for 40 days before and 40 days after confinement, with the payment of full salary.

THE CAIRO CONGRESS

ANNOUNCEMENT has been made of The Centenary celebration of the Faculty of Medicine, Cairo, and the International Congress of Tropical Medicine and Hygiene, to be held under the patronage of His Majesty, King Fonad I, December 15 to 22, 1928. The work of the Congress will be carried out by the followlng sections: tropical medicine, surgery, ophthalmology, hygiene and sanitation, parasitology, and pathology and bacteriology.

CALIFORNIA MAKES TWO ADDITIONAL DISEASES REPORTABLE

TULAREMIA and coccidioidal granuloma have been made reportable diseases by the California State Board of Public Health, according to a recent announcement from Walter M. Dickie, M.D., Director.

Health officers have been requested to notify physicians in their respective territories under their jurisdiction in order that cases of these diseases will be reported promptly.

MICHIGAN MAKING BREAST FEEDING SURVEYS

BREAST feeding surveys are being made in five counties in Michigan, including Menominee, Houghton, Arenac, Montcalm and Crawford.

MATERNAL MORTALITY DECREASE IN RURAL NEW YORK

IN rural New York there was a decrease of 26 per cent in the maternal mortality rate for the period 1921-1925 from the rate for 1915-1920. This decrease is considered as possibly due to the increased use of hospitals for confinement purposes by rural mothers.

FINDINGS IN COST OF MEDICAL CARE

THE demand for medical services, their supply and distribution are subjects of a preliminary survey being made by the Committee on the Cost of Medical Care, which has its 5-year program well under way.

According to an announcement recently made by the chairman of the committee there are now 1,000,000 persons engaged on a whole-time basis in curing and preventing diseases. Although $5,000,000,000 are invested in hospitals and other equipment, many people of the United States are not receiving adequate medical service at costs within their means. It is found that the high costs are due often to the many separate bills, not only the physicians' fees. Too, physicians as a group are not earning adequate incomes considering the cost of their years of training and their overhead expenses, and many do not have access to hospitals and other facilities for scientific work. It has also been found that nurses and dentists are not receiving satisfactory returns for their services. It is the purpose of the committee to investigate the fundamental causes of the existing situations, and to make recommendations for the remedies.

In addition to the cost to the people of hospital care, nursing, dentistry, drugs, physiotherapy, surgery, and other medical services, the committee will follow the preliminary survey with a study of the problems involved in the prevention and cure of disease.

Another group of studies will be an analysis of industrial medical services and other organized facilities now serving particular groups of the population.

It has been estimated that illness costs the people of the United States more than $5,000,000,000 a year.

The committee's program is being supported by the Carnegie Corporation, Milbank Memorial Fund, Russell Sage Foundation and the Twentieth Century Fund. The American Medical Association, the U. S. Public Health Service and the Metropolitan Life Insurance Company will coöperate with the committee.

Officers of the committee organized in May, 1927, are: Ray Lyman Wilbur, M.D., President Stanford University, Chairman; C.-E. A. Winslow, Dr.P.H., School of Medicine Yale University, Vice-chairman; Chellis A. Austin, Seaboard National Bank, Treasurer; and Harry H. Moore, director of study.

HEALTH OFFICERS TO MEET IN OCTOBER

THE annual meeting of California health officers will be held, as usual, in conjunction with the convention of the League of California Municipalities in San Bernardino October 9 to 13, 1928. Preparations for the program are now under way and the 1928 meeting gives promise of being the most successful ever held.

UNIVERSITY OF TORONTO'S M.D. DEGREE

THE proposal, sponsored for some time past by Dr. Herbert Bruce, has finally been accepted by the Board of Governors of the University of Toronto with the announcement on June 1 that the university has fallen into line with many other universities in different parts of the world and has decided to grant the degree of Doctor of Medicine to all students qualifying in the 6th year course. This will take the place of the degree of Bachelor of Medicine, which was the only award up till the present.

PERSONALS

W. S. BIZZELL, for several years sanitary engineer with the Fort Worth, Tex., City Health Department, has been appointed supervisor of public utilities for the City of Coleman, Tex.

DR. T. A. CALLAHAN has been appointed full-time County Health Officer for Hartford County, Md.

DR. PORTER J. CRAWFORD, formerly secretary of the Miami, O., County Public Health League and Health Commissioner of Troy and Miami Counties, O., sailed for Brazil, July 1, as a member of the Rockefeller Foundation. He will assist the Brazilian Government in the establishment of local health units in Northern Brazil and in the program of prevention of yellow fever.

DR. EDGAR R. HIATT has resigned as health commissioner of the City of Logan and Hocking County, O., to become health commissioner of the city of Troy and Miami County. He succeeds Dr. Porter J. Crawford.

DR. F. D'HERELLE of Paris has been appointed professor of bacteriology in the School of Medicine, Yale University. Dr. d'Herelle is best known for his development of the subject of bacteriophagy, although he has made other contributions to the subject of bacteriology. Dr. d'Herelle is a native of Montreal, Can., and has had extensive experience in foreign fields.

DR. E. MURPHY HOWARD, JR., Harlan, Ky., and Dr. Lawrence T. Minish, Frankfort, Ky., have been appointed to the Kentucky State Board of Health for a period of 4 years by Governor Sampson. They will succeed Dr. Joseph E. Wells of Cynthiana and Dr. James W. Kincaid of Catlettsburg.

DR. S. ROWLAND HILL has been reappointed City Health Officer of Lansing, Mich.

GRACE LUBIN, PH.D., has been appointed director of the serologic work of the laboratories of the Michigan State Board of Health at Lansing. Dr. Lubin succeeds Reuben L. Kan, Sc.D., who goes to Ann Arbor as director of the laboratory of the University Hospital.

DR. JOHN S. FULTON, who has been with the Maryland State Health Department since 1896 has resigned as director and has been appointed director emeritus. Dr. Robert H. Riley, assistant director, has been appointed to succeed Dr. Fulton.

DR. WILLIAM C. CAMP of Spencer, W. Va., has been appointed Health Officer of Roane County.

OLLIE E. READ, head of the dairy husbandry division, Michigan State College of Agriculture, East Lansing, Mich., has been appointed chief of the Bureau of Dairy Industry, U. S. Department of Agriculture.

DR. RAFFAELE LORINI, health officer of Coronado, Calif., for 27 years, has resigned. Dr. Charles W. Lane is acting City Health Officer of Coronado, pending the reorganization of the city Board of Health.

DR. A. GRANT FLEMING has been appointed Director of the Department of Public Health and Preventive Medicine at McGill University, Montreal, Can.

DR. CHANNING E. DAKIN has been appointed Health Commissioner of Mason City, Ia. to succeed the late Dr. Matthew J. Fitzpatrick.

DR. ROBERT SEBASTIAN COWLES of Franklin, Tenn. has been appointed Health Officer of Greene County, Tenn.

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